

OS/2

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OS/2

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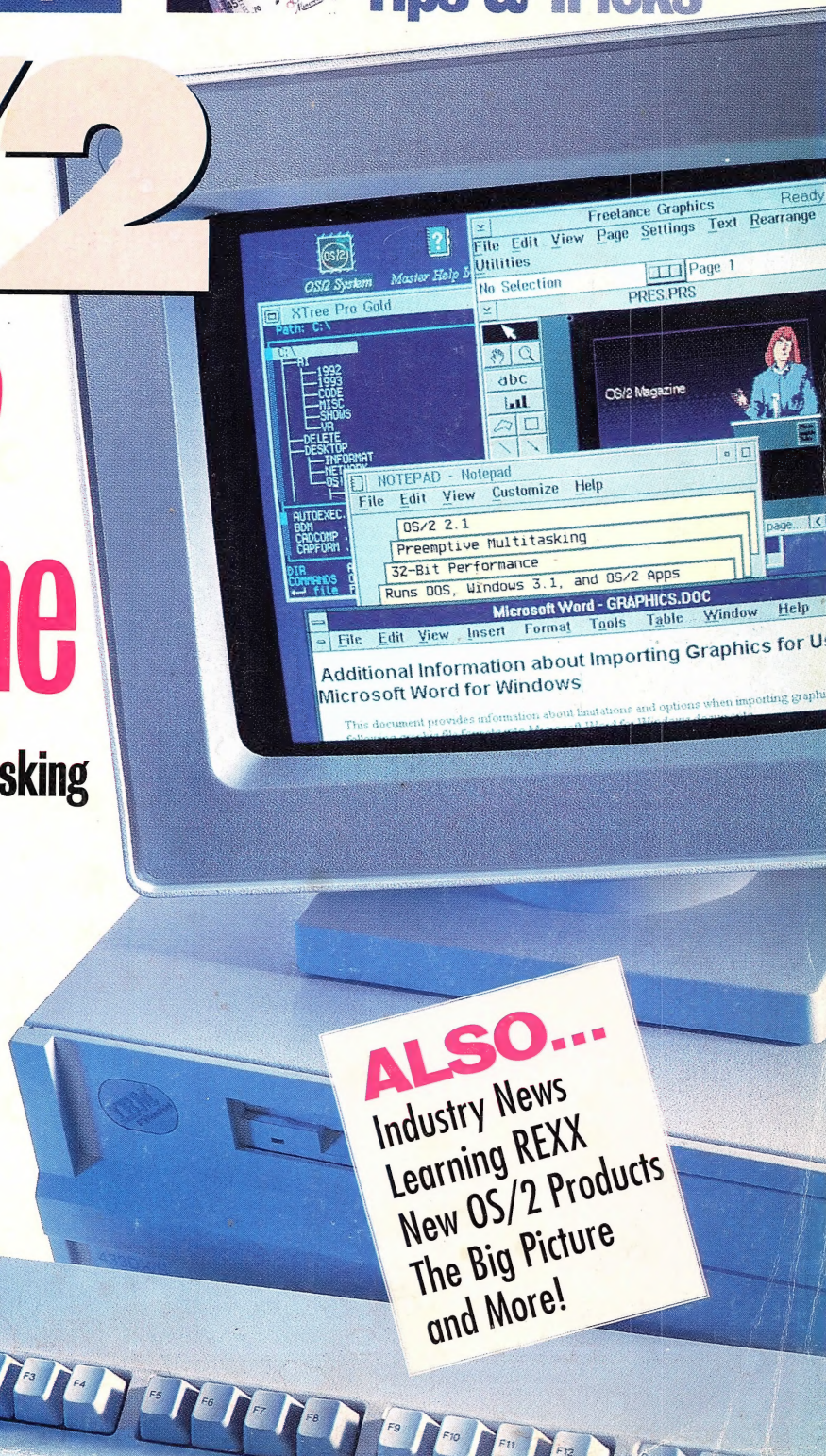
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WordPerfect 5.2 for OS/2

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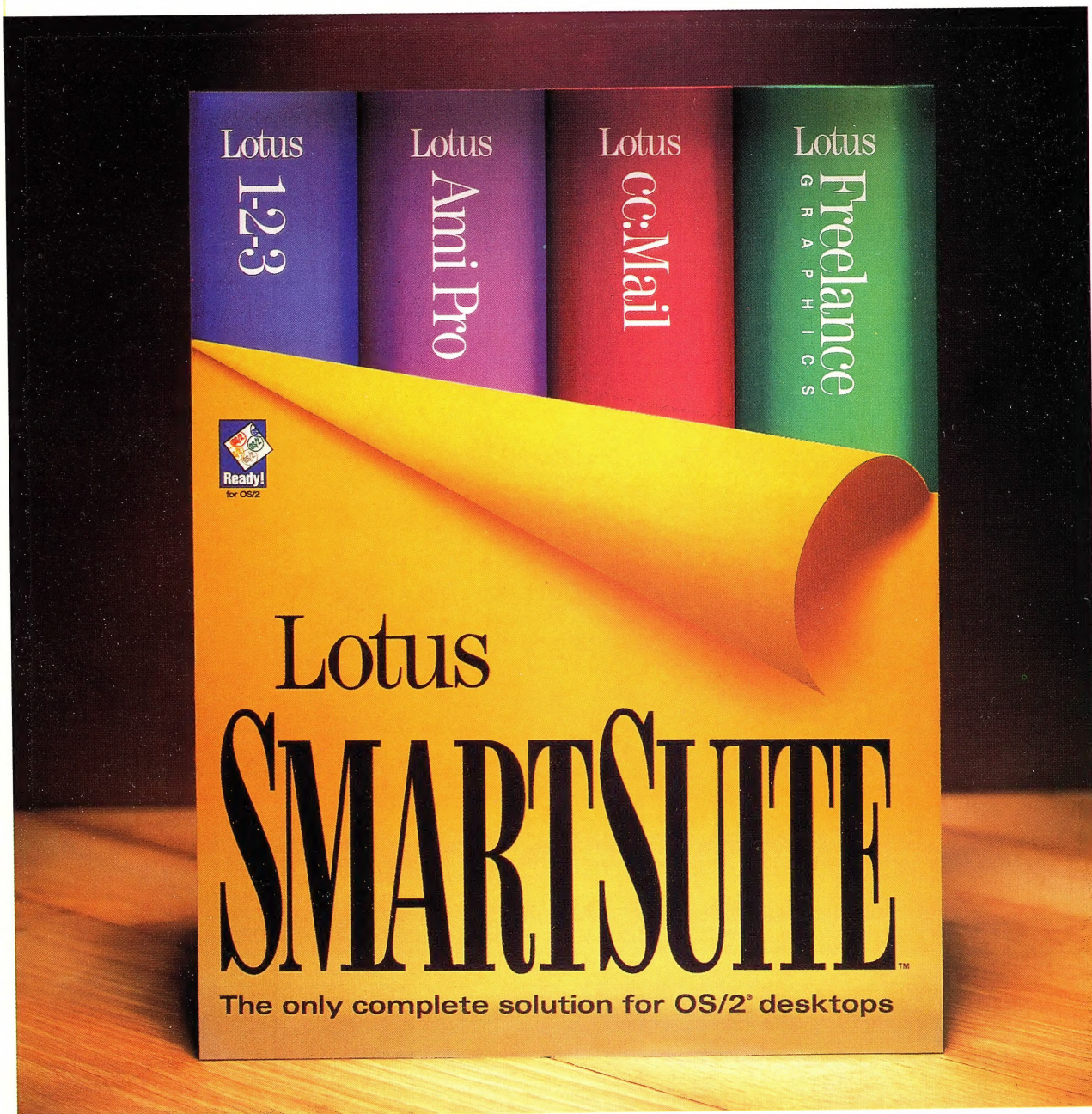


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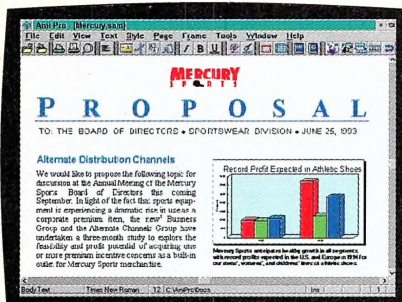


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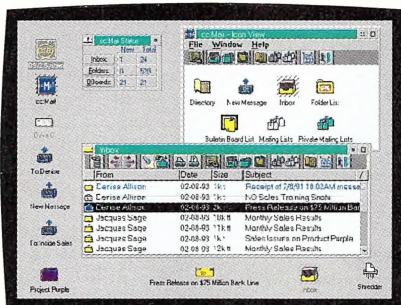


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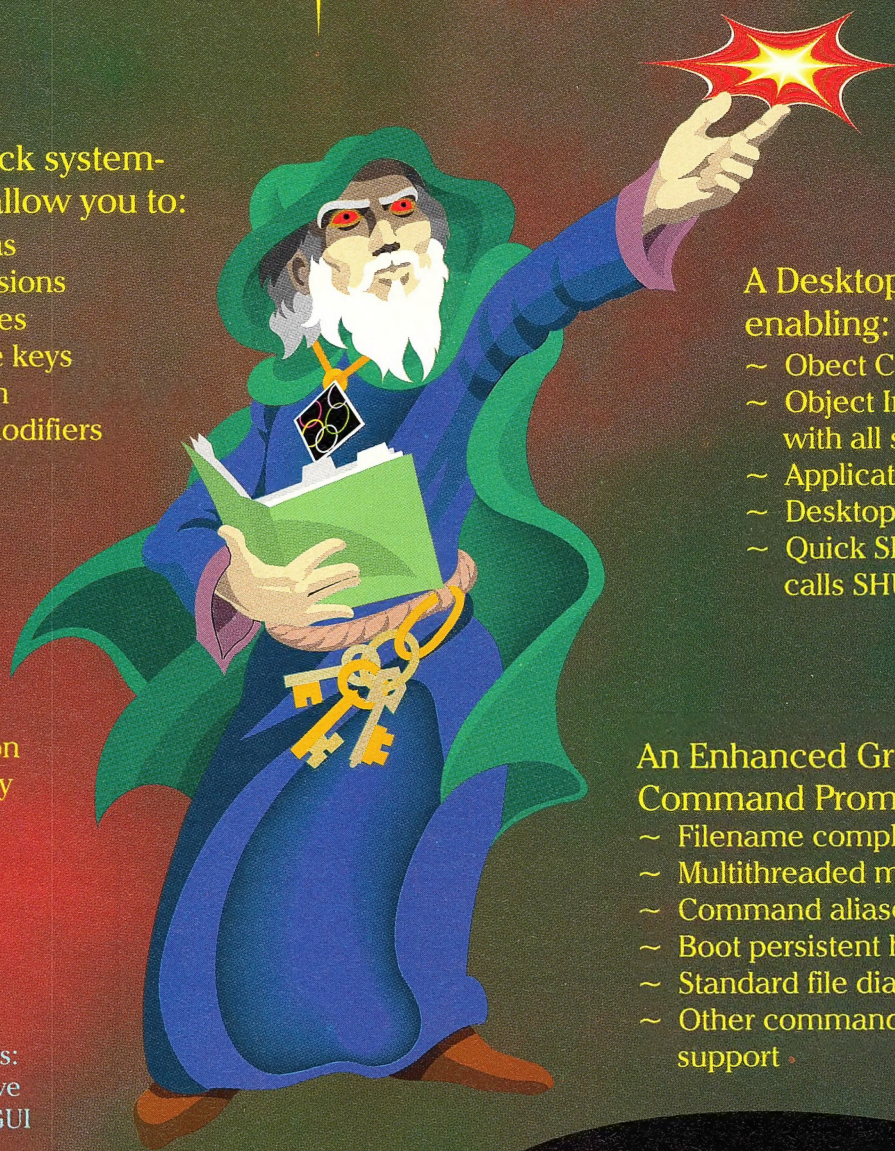
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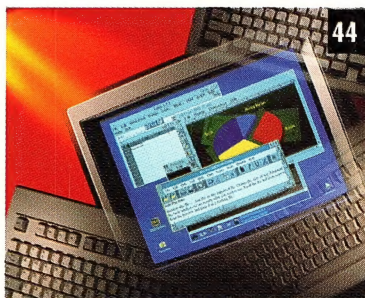
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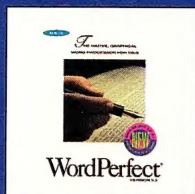
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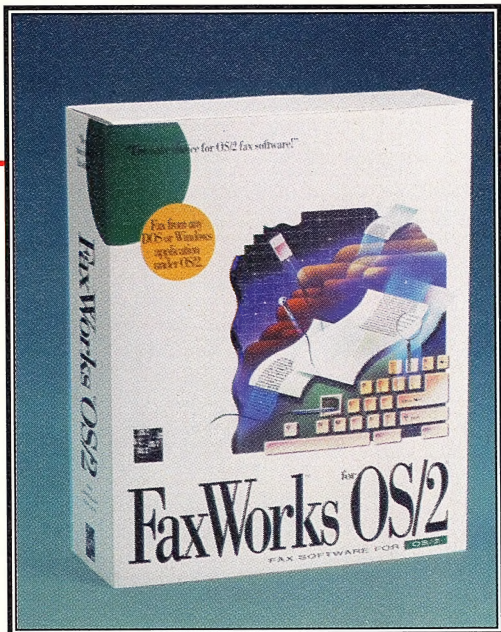
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Perspectives

Welcome to *OS/2 Magazine*

Welcome to the premier issue of *OS/2 Magazine*, written and edited for you, the OS/2 user and enthusiast. Whether you use OS/2 at work or home or are responsible for hundreds of OS/2 installations, our goal is to make your decisions easier, your problems less perplexing, and your computing more productive.

Let's be more specific. *OS/2 Magazine's* mission is three-fold: to inform you about the potential of your OS/2 PC, help you reach that potential, and guide you through the maze of OS/2-specific products and services that are available today.

As you read this premier issue, there are millions of OS/2 2.0 and 2.1 users and millions more considering the move to this advanced 32-bit operating system. The choice isn't an easy one: although OS/2 is one of the most powerful operating systems available for Intel-based PCs, the quantity of native OS/2 application software is dwarfed by DOS and Windows.

Let's be honest, OS/2 2.1 suffers its share of problems, ranging from troublesome installation procedures to a scarcity of reliable device drivers. But if you're looking ahead to the future, you know that the day of 32-bit operating systems is upon us, and OS/2 offers the greatest set of features and performance in any advanced PC operating system available today.

That's where *OS/2 Magazine* comes in. In this first issue, Brian Proffit explains the features and benefits of the latest version of OS/2, Bob Chapman talks about performance and why many conventional computer benchmarks don't do justice to preemptive multitasking operating systems, and David Moskowitz explains what preemptive multitasking is, and how it can change the way you work with computers.

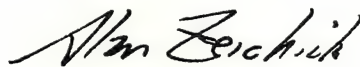
In this first issue, we'll also show you where to find super-VGA drivers for your current (or future) high-resolution video board and help you choose a native OS/2-based personal scheduling program. Over the next several months, we'll be dis-

cussing issues such as maximizing the performance of OS/2 network-client software, understanding the content and configuration of OS/2's system files, weighing the advantages and disadvantages of HPFS and FAT file systems, migrating central databases to a distributed model, specifying an affordable yet powerful multimedia workstation, communicating between OS/2 and minicomputers and mainframes, and much more.

I'm proud to introduce an outstanding faculty of contributing editors who will be writing regular columns and feature articles. Brian Proffit will be keeping us informed about the latest OS/2-specific software and hardware; Dick Conklin will report on what's happening in the OS/2 industry. Matt Trask will help you make the most out of your investment in Microsoft Windows software, and Alex Lane will teach you about OS/2's built-in REXX language. David Reich of IBM's OS/2 support team will answer your technical questions, and Amy Wohl, an experienced consultant and analyst, will keep her eye on the bigger picture.

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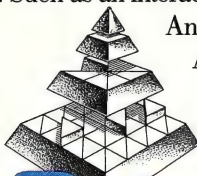


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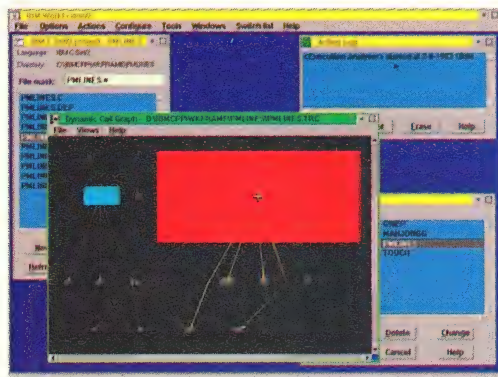


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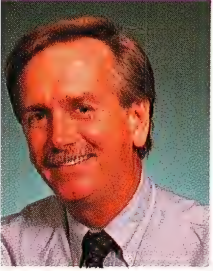
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Hot Off The Press

THE STORY OF GATES, CANNAVINO, AND OS/2 BY DICK CONKLIN

Paul Carroll's new book, *Big Blues: The Unmaking of IBM* (Crown Books, 1993), is getting a lot of attention from OS/2 watchers, and even in the non-computer press. The book focuses on the rivalry between Microsoft and IBM over OS/2 that reached a climax in the fall of 1989 and led to their much-publicized divorce.

Until then, the two companies shared the development and marketing of the new operating system. But their relationship, which originated in 1980 with IBM's selection of Microsoft's DOS for its new PC, was growing increasingly strained. OS/2 development labs in Seattle, Wash., Boca Raton, Fla., Austin, Texas, and Hursley, England tried to manage the huge development effort. Microsoft's Windows product, based largely on the same user interface as OS/2's Presentation Manager, was beginning to take off. IBM was asking Microsoft to publicly endorse OS/2, and Microsoft was asking IBM to do the same for Windows.

The jockeying for position—and a share of the booming PC software market—came to a head at COMDEX Fall 1989 in Las Vegas. Microsoft CEO Bill Gates and IBM Entry Systems Division President Jim Cannavino held a dinner for key independent software developers followed by a news conference attended by 800 people. Carroll's book describes how, in spite of well-

rehearsed scripts, Gates and Cannavino each stopped short of endorsing the other's product. This sent a signal to the software industry that the "marriage" was over.

In a joint interview published in the *IBM Personal Systems Developer* magazine (predecessor of *OS/2 Developer*), Gates and Cannavino were more upbeat, reflecting the official positions that both had worked so hard to achieve. The article was one of the last joint statements made by the two executives. Cannavino's low-key endorsement of Windows contrasts with Gates' praise for OS/2. Here are some of the more historically interesting comments:

Gates on the future of Windows: "...it is obvious that we will not include things like threads and preemptive multitasking in Windows. By the time we added that, you would have OS/2."

Gates on application software: "...after mid-1990, Microsoft will ship PM versions of applications at the same time or before Windows versions. We can see the opportunity to create much better applications under OS/2. The OS/2 market is growing sufficiently so that it is a good business decision to do

this...the goal for OS/2 is to be the universal operating system, supporting every application ever done for DOS, the Macintosh, minis, UNIX, and Windows...there is virtually no application in the world that OS/2 cannot support."

Gates on OS/2 2.0: "I tend to be relatively optimistic about the 32-

bit version...most users of high-end applications will be using a 386 and therefore want OS/2 2.0."

Gates on multimedia: "Many OS/2 features are important for multimedia, such as background processing and high-speed file I/O... OS/2 will have a

superset of the multimedia features in Windows. Since we are starting our development with the idea of supporting a superset/subset relationship between the multimedia capabilities on OS/2 and Windows, it will be much easier to move multimedia applications from Windows to OS/2."

Cannavino on entry systems: "...For customers who need or want an entry graphical desktop system on the appropriate hardware, IBM will recommend they purchase MS Windows. This lets them get an SAA user interface on many more lower end systems. The Windows user interface is almost identical to

**The jockeying
for position—and for a
share of the booming PC
market—came to a head
at COMDEX Fall 1989.**

Presentation Manager, making it very easy for customers to migrate to OS/2 over time."

TELL ME ABOUT YOUR PROBLEM

Technical support has always been a big factor in a product's pricing, and software companies have long struggled to provide good service while managing growing support costs. Some companies train their retail dealers or large corporate customers, who in turn provide local user support. Others provide direct vendor-to-user support via toll-free "800" numbers, at least for a few months following purchase. Most of the initial questions are about product installation or device support and the need for lessens over time.

Software developers require special attention to their questions, which are usually about the operating system or software tools such as language compilers, debuggers, and so on. On one hand, operating system providers like Microsoft and IBM would like to recoup some support costs through fees, yet they know how important new applications are to a new operating system's acceptance and growth.

Microsoft modifies Windows support

As competition heats up and margins drop, both companies are looking for better support methods and pricing structures. Microsoft recently announced that it is bringing its Windows support more in line with its current DOS offerings (*Wall Street Journal*, Sept. 10, 1993).

Windows advice for users will be free for the first 90 days. After that, each company, department, or individual will have to choose a support option. The charges will vary from per minute to a flat fee, ranging from \$.95 per minute to \$20,000 per year. Microsoft claims the new policy is intended to cover shortfalls brought about by lower prices and profit margins. According to

Deborah Willingham, Microsoft's general manager, the new fees "aren't priced to be a profit-making part of the business."

A new approach: the on-line expert

IBM is looking at a more radical solution to technical support. In a new pilot program called AskPSP, IBM's Personal Software Products (PSP) division is using an artificial intelligence application (remember "Eliza" from the 1970s?) to provide OS/2 and LAN Systems developers with answers to their technical questions and problems. AskPSP, initially available at no charge as part of a limited pilot program, is designed to provide an "on-line help desk" that is comprehensive and easy to use.

Using AskPSP, developers enter a natural-language description of their problem. The system responds with either a set of possible answers culled from a library of case histories or it asks the user additional questions to refine the search. If AskPSP cannot find an appropriate answer in its case history library, the developer can automatically capture the question and search structure and send it to IBM, so that it can be researched, answered, and added to the library for future editions of the program. The initial version has a library of 1,000 cases on a CD ROM.

Here's a typical session: Let's say your mouse won't work. In AskPSP's Description field, you enter: "Mouse does not work." The search engine goes to work and returns with a ranked set of possible answers. If none of these are appropriate, you can ask for additional search questions such as: "Who is the manufacturer of your mouse?" Then, "What area of OS/2 are you interested in? (General usability, Multimedia, Programming, etc)." Next, "What General usability area are you interested in (Using DOS, Using OS/2, etc).?" Then, "Are the following three lines in *config.sys*?" (to determine if the mouse device

drivers are loaded.)

This process will eventually lead to the single "best" answer to a problem or reach the conclusion that no answer is in the case base. In this example, the solution was to copy the correct mouse driver to the OS/2 subdirectory and change *config.sys* to reference it.

In the case of an unresolved search, you can save the sequence in a file that can later be sent to IBM for resolution and response. New solutions are added to the next AskPSP release, making the case base grow smarter over time.

AskPSP uses a beta version of CasePoint 1.3 for OS/2 from El Segundo, Calif.-based Inference Corp. CasePoint provides high-speed, read-only access to case libraries developed with their CBR Express, a tool for creating case-based retrieval systems. CBR Express in turn incorporates ART-Enterprise, another Inference tool for building intelligent systems.

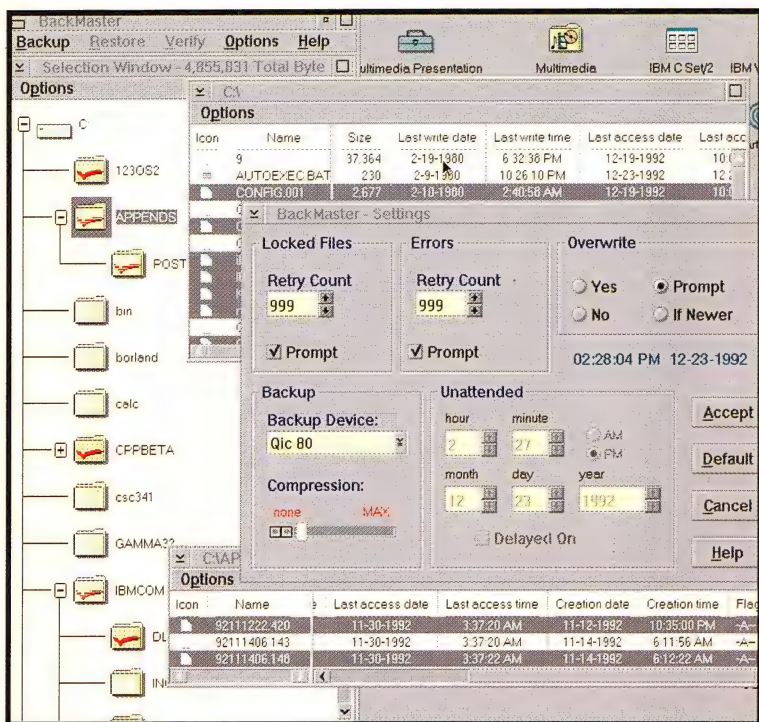
According to Mark Goldstein, manager of IBM's software developer support group, "We like to think of AskPSP as empowering developers so that they are no longer as dependent on IBM support. This doesn't mean that they will no longer need us, they just won't be 'locked in.' Think of it as a productivity tool for the developer. When a problem arises, you phrase an AskPSP query. Often, you'll discover that an answer has already been found. In many cases, it will save you the time of researching a problem and calling IBM support to hear, 'Yes, we already know of that problem and here is the solution'."

Goldstein calls AskPSP "the help desk of the future. This is expert system technology, running in the OS/2 2.1 environment, using multimedia and other new functions. It uses a case-based approach, rather than the old keyword search, to isolate a problem."

IBM distributed AskPSP at no charge to the more than 2,000 devel-

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opers that attended the PSP Technical Interchange (Orlando, Fla., Aug. 29-Sept. 2, 1993). A limited number of additional copies are available at no charge to OS/2 and LAN Systems developers as part of the pilot program. Call IBM's PSP Developer Assistance Program at (407) 982-6408 for more information.

Microsoft taps Inference for Windows

Microsoft wasted no time getting on the Inference bandwagon. One week after the IBM conference, they announced a joint agreement with Inference Corp. that will deliver a similar case-based retrieval service for end users in future versions of Windows.

"Inference has raised the bar for automating user assistance," said Jonathan Lazarus, vice president of systems strategy at Microsoft. "We will use Inference's technology as the basis to build superior functionality in future versions of Windows. Inference has the proven ability to meet the needs of corporate customers and provide innovative technology designed to improve user assistance, help-desk automation and case-based reasoning tools."

IBM GOING OUT OF BUSINESS SALE?

No, IBM isn't going out of business, but it has found a way to sell PCs at bargain basement prices. It seems that after IBM has withdrawn a personal computer product from its primary retail channels, surplus inventory sometimes exists. In addition to new, unused equipment there are IBM-refurbished models as a result of consumer and dealer returns. To dispose of this excess and surplus inventory, the IBM-PC Company announced two new channels of distribution that focus on the secondary market for PC equipment: the PC Factory Outlet, and Surplus PC Resellers.

The Factory Outlet will sell previously withdrawn, new, refurbished

and excess inventory PCs. In addition to PCs, displays, features, and options will also be sold. Initially, these are older PS/2 models and accessories, but the availability list will change as later models are withdrawn or as surplus inventories are depleted. IBM says that their surplus list will not overlap with any PC models that are currently sold through dealers or IBM Direct. Systems come with a limited warranty and a 15-day money-back guarantee. The latest list can be obtained by calling IBM's fax-reply system at (800) 426-3395. Orders can be placed by calling (800) 426-7015.

IBM is also setting up selected secondary market resellers to buy surplus goods directly from IBM. Secondary market resellers are those who commonly focus on older technology, liquidation, reconditioned, used, trade-in and off-lease equipment.

FREE DEMO CDS

The IBM-PC Company is now packaging CD ROM collections of demonstration application software with some of its PCs, allowing end users to sample a variety of over 80 best-selling, fully-functional software packages on a compact disc, without charge, before making purchasing decisions. Several categories of software such as entertainment, business applications, utilities, and programming tools are featured from leading developers such as Microsoft, Micrografx, Berkeley Systems, and others.

The enabling software was written by InfoNow Corp. of Boulder, Colo. It lets users try most application packages up to three times. The CDs are coded with encryption features to prevent further usage after the trial period, unless the customer calls to purchase it.

Customers order software by calling a toll-free 800 number, available 24 hours a day, seven days a week. After supplying a credit card number, users receive a code to "unlock"

the pre-installed, encrypted software. The software is then ready to use. All software offerings come with an unconditional 60-day money-back guarantee. The featured titles on the CDs will be updated approximately every 30-60 days, and new packages are added regularly to the suite of offerings.

IBM OS/2 2.0 SERVICEPAK AVAILABLE

Although most OS/2 users have probably already upgraded to OS/2 2.1, a free update is available for users of OS/2 2.0. The IBM OS/2 2.0 ServicePak, Level XR06100, includes fixes that were provided for customer-reported problems since OS/2 2.0 was distributed in March, 1992.

The ServicePak is designed to be applied to the OS/2 2.0 product as released in March, 1992, to IBM OS/2 2.0 Preloaded systems, or to OS/2 2.0 systems that have the previous ServicePak XR06055 installed. The ServicePak files can be downloaded electronically or ordered by mail on diskettes or a CD-ROM. Copies can be made and distributed to other properly-licensed OS/2 2.0 owners for no charge.

A booklet of installation instructions is included with the ServicePak. A "Read Me" file, called *readme.sp2*, contains technical considerations. Electronic delivery of the ServicePak is available from the following electronic bulletin board systems:

- IBM OS/2 BBS: Subscribers to the OS/2 BBS can download the ServicePak from the Software Download Library. New subscribers can call (800) 547-1283.
- CompuServe: Information Service subscribers may download the ServicePak from the IBM OS/2 Forum Library (GO IBMSERV).
- Internet: Customers having access to Internet services can download the ServicePak from the network. Customers should do an Anonymous FTP from "Software.Watson.IBM.Com."

The ServicePak is located in the /Pub/OS2 directory.

- IBM-PC BBS: The IBM Personal Computer Company BBS (formerly the IBM National Support Center BBS) has the ServicePak in Directory 4. Call (919) 517-0001 via modem.

If you reside in the U.S. and do not have access to any of the electronic bulletin board systems, or if you need the ServicePak delivered on diskettes or CD-ROM, you can order it by calling (800) 494-3044 (for U.S. use only) and charging the shipping fee to your credit card. Two-day express mail service is used to deliver the ServicePak.

The disk version of the ServicePak consists of 17 3 1/2 inch disks or 19 5 1/4 inch disks. Either the disk or CD-ROM version will be shipped for a non-refundable fee of \$25.00 plus tax.

A BREAKTHROUGH FOR THE BLIND

Blind and visually impaired people can now use OS/2, Windows, and DOS applications, thanks to a new IBM product. Screen Reader/2 version 1.1 lets blind people access OS/2 2.1, Windows 3.1, and DOS applications via their unmodified graphical user interfaces. Using a special keypad for navigation, the program reads on-screen information audibly to the user.

When the pointer is moved to a new application, the program announces its title automatically. It also announces menu items, icons, pushbuttons, radio buttons, spin buttons, and other controls. Many popular speech synthesizers are supported for voice output and refreshable Braille devices can be added for tactile input and output. More information on Screen Reader/2 can be obtained by calling (800) 426-4832.

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sors, spreadsheets, and other applications—are making a comeback. At the recent IBM OS/2 Technical Interchange in Orlando, Fla., Lotus Development Corp. announced SmartSuite for OS/2, “the first complete desktop suite for IBM’s OS/2 2.1 operating system.” The suite comprises native, 32-bit ver-

sions of Ami Pro, 1-2-3, Freelance Graphics and cc:Mail, which are integrated with OS/2 2.1’s Workplace Shell.

Lotus also announced an introductory bundle promotion that includes a free copy of OS/2 2.1 for users who purchase or upgrade to SmartSuite for OS/2. Priced at \$795

(\$595 for the upgrade), the limited-time bundle will be available beginning with initial shipments of SmartSuite for OS/2 from all Lotus Authorized Resellers.

Another OS/2 32-bit integrated application product almost beat Lotus to the punch, but was derailed by the financial difficulties of its European developer. N/Joy, a 32-bit, object-oriented, workgroup-based package includes an impressive spreadsheet, word processor, business graphics program, e-mail module and database manager. The product was just emerging from beta testing when its Vienna-based creator went bankrupt and is forced to sell the product, international distribution rights, and three-person programming staff. Interested in taking over a ready-to-market application? Call the ASK Group at (407) 392-3933 for details.

Table 1: Toll-Free IBM Numbers

OS/2 Multimedia Tools	(800) 228-8584
OS/2 2.0 Customer Support (Defect Reporting)	(800) 237-5511
IBM PSP Developer Support Marketing Center*	(800) 285-2936
OS/2 2.0 Software Support	(800) 288-8737
OS/2 Sales	(800) 342-6672
	(in Canada, (800) 465-1234)
IBM National Telesales Marketing (IBMCALL)	(800) 426-2255
IBM Software Installer 1.2 for OS/2	(800) 426-2279
Boca Raton Technical Services Software System Test	(800) 426-2622
IBM Direct	(800) 426-2968
DCE Client for Windows Beta Program	(800) 426-3040
	(in Canada, (800) 561-5293)
LAN NetView Extended Beta Test	(800) 426-3040
	(in Canada, (800) 561-5293)
IBM Business Partner Locator (PS/2 Dealers)	(800) 426-3377
IBM FAX Information Service	(800) 426-4329
	(in Canada, (800) 465-3299)
OEM Sales	(800) 426-4579
Skill Dynamics (education)	(800) 426-8322
	(in Canada, (800) 661-2131)
Ultimedia Developer Assistance Program	(800) 426-9402
Integrated Systems Solutions Corp.	(800) 472-4772
OS/2 Application Assistance Center + TalkLink (OS2BBS)	(800) 547-1283
Personal Systems Technical Solutions magazine	(800) 551-2832
Several Developer Assistance Programs	* (800) 627-8363
IBM Developer Connection for OS/2	(800) 633-8266
	(in Canada, (800) 561-5293)
IBM Direct Response Marketing	(800) 633-8266
	(in Canada, (800) 561-5293)
IBM Redemption Center (OS/2 2.0 Upgrade)	(800) 677-2581
IBM Porting and Technical Consulting Workshops	(800) 678-3187
Personal Systems HelpCenter	(800) 772-2227
IBM Publications	(800) 879-2755
PenDOS Software Developer Kit	(800) 888-8242
OS/2 Developer magazine	(800) 926-8672
OS/2 Free Seminar Enrollment	(800) 937-3737
DB2 Technical Conference	(800) 955-1238
IBM Customer Support Center	(800) 967-7882
Personal Software Products Support Center (Defect report)	(800) 992-4777
IBM Locator (calling IBM employees)	(800) 426-3333

*indicates that the number also works in Canada

IBM TOLL-FREE TELEPHONE NUMBERS

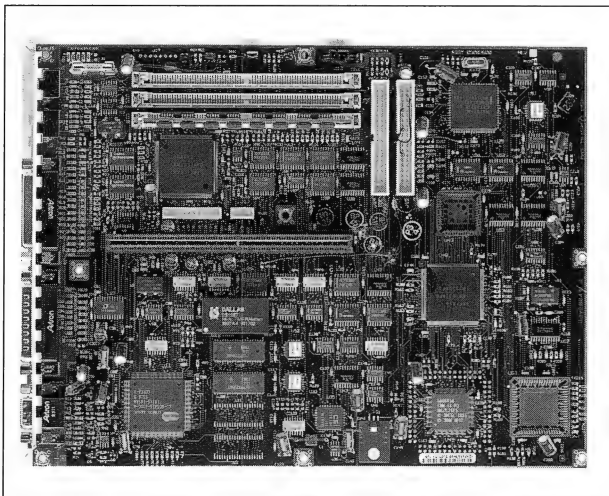
A few years ago, you couldn’t reach IBM via a toll-free number. Now they need an 800 number just to find the other 800 numbers. Table 1 provides a few, according to the Oct. 15, 1993 issue of *IBM PSP Developer Support News*.

Dick Conklin’s PC career began in 1975, selling IBM’s first PC, the model 5100 Portable Computer. Five years later, he joined IBM’s Personal Computer team, working on the first beta version of PC DOS. (He doesn’t claim credit for the IBM/Microsoft wedding, but he was a frequent chaperone during their engagement.) DOS led to OS/2, and today Conklin is the editor of OS/2 Developer, an independent Miller Freeman Inc. publication for commercial and corporate application software developers. He has also published five books, three of them about OS/2. Send your OS/2 news to him via CompuServe at 76711,1005 or via Internet at os2mag@vnet.ibm.com.

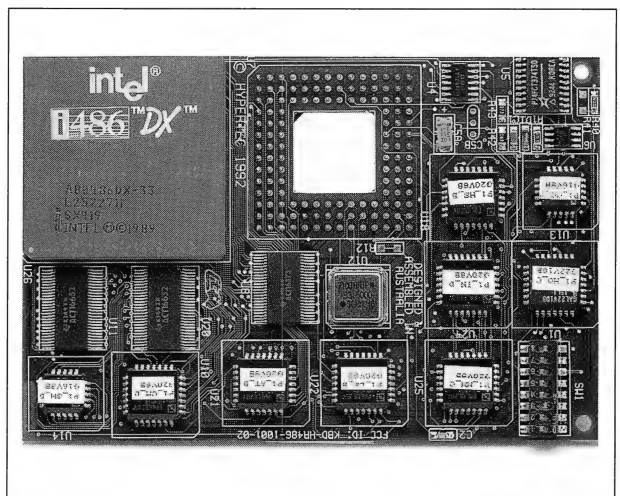
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Each of these easy-to-install processor replacements requires no drivers or system reconfiguration, and utilizes all existing processor subsystems.

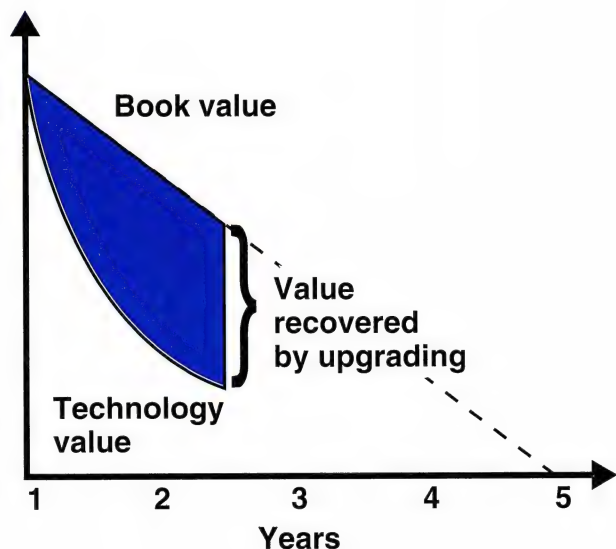
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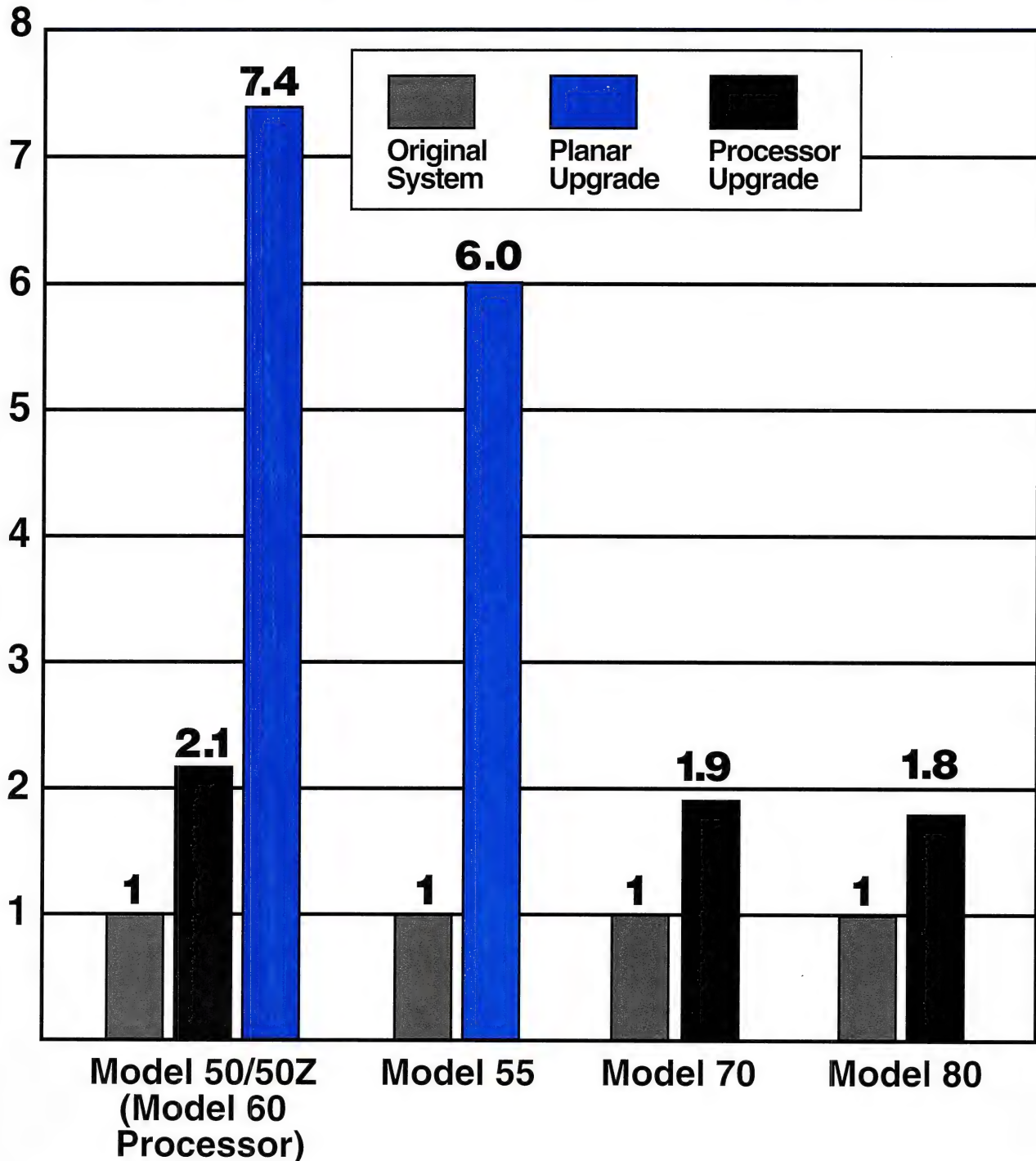
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*Scores based on BAPco Sysmark 1992.

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Processor	486SLC2-25/50 MHz
Co-processor	Optional
Memory	4MB (Max. 16MB)
Video	SVGA with GUI accelerator, 1MB video memory, resolution up to 1024 x 768 at 256 colors, non-interlaced.
Ports	One serial, one parallel, both enhanced, bi-directional with DMA support. Keyboard. Mouse.
Diskette	Supports up to 2.88MB diskette drives.
Fixed disk	Supports current ESDI or ST506 plus additional IDE disk, or up to two IDE disks.
Applicable systems	IBM PS/2 Model 50-021 IBM PS/2 Model 50Z-031, 061 IBM PS/2 Model 55-041, 081, LTO, LEO, 031, 061
Benefits	• IBM 486SLC2-25/50 microprocessor—performance equivalent to today's fastest processors, maximizing price performance • Internal memory cache controller and 16KB cache—optimize processor performance to take advantage of ultra-fast internal processing speed • Standard 4MB of 70ns memory, up to 16MB—flexibility in memory configuration (70, 80, 85ns memory) —Industry Standard, IBM PS/2 Proprietary, ECC (72 PIN) • Accelerated SVGA video—resolution up to 1024 x 768 for enhanced color richness/256 colors • Standard 1MB of video RAM—enhances resolution and color support, improves performance in OS/2 and Windows environments • Supports your existing ESDI hard drive plus one or two IDE hard drives—protection of current DASD investment, with growth potential • Supports 80MB, 170MB or 245MB IDE hard drives

Processor Upgrades for PS/2 Models 50/60 and 50Z

Model	Model 50/60 and 50Z
Processor	486SLC2-25/50
Co-processor	Supported (Optional)
Applicable systems	IBM PS/2 Model 50-021 IBM PS/2 Model 50Z-031, 061 IBM PS/2 Model 60-041, 071
Benefits	• IBM 486SLC2-25/50 microprocessor with an internal processing speed of 50 MHz—increased performance and 486 functionality • Internal 16KB L1 cache, 128KB L2 cache, write-thru cache—optimize processor performance to take advantage of ultra-fast internal processing speed • Usability—no drivers to load, no system reconfiguration required

Processor Upgrades for PS/2 Models 70 and 80

Model	Model 70 and 80
Processor	486DX-33 MHz
Co-processor	Internal
Applicable systems	IBM PS/2 Model 70-E61, 061, 081, 121, 161 IBM PS/2 Model 80-041, 071, 081, 111, 121, 161, 311, 321
Benefits	• Intel 486DX-33 with a processing speed of 33 MHz—increased performance, 486 functionality, integrated math co-processor • Internal 8KB cache—optimizes processor performance by caching existing planar memory • Usability—no drivers to load, no system reconfiguration required





OS/2: A Status Report

OS/2 HAS HAD PROBLEMS, BUT IBM DOESN'T ABANDON CUSTOMERS BY AMY D. WOHL

Your editors have been kind enough to give me the pleasant assignment of roving the computer industry (something I do on a daily basis) looking for things of interest to the OS/2 community, and expressing opinions about them. No one has ever accused me of being bashful in sharing my opinions, so you can expect this column to be a monthly cruise through the computing ocean, usually focusing on the front-breaking waves, and trying to offer you a star to steer by before you crash into a hidden reef.

I'll probably focus less on OS/2 itself (because it's covered so generously elsewhere in this magazine) and more on computer industry events—now and in the future—that might affect OS/2 and those who use it. As always, a column is a dialogue between a writer with a point of view and her audience. Feel free to suggest topics for discussion, to add more information to the mix, or to agree or disagree at any time. Any columnist who doesn't thrive on a good argument doesn't understand the medium.

A good starting point seems to be a look at the newly reviving status of OS/2 that has made IBM jubilant, users confused, developers astounded (since they thought it had died), and Microsoft furious. In fact, it is the announcement of Windows NT and its progression into the marketplace that seems, in a curious way, to have heated up

the OS/2 market and started it on its way to a steady simmer.

Problems

OS/2 had more than its share of troubles getting started. It was too big, too slow, and lacked tools and applications. In that regard, it was pretty much like every other serious operating system ever built. Where it broke with tradition was in its joint ownership and sponsorship by IBM and Microsoft. In the tawdry and too-public battles these companies fought in their efforts to control the fate (and the revenues) of the personal computer industry, battles in which a savvy David taunted and tricked the giant IBM more than once, OS/2 got caught in the middle.

But IBM doesn't abandon operating systems or the customers who've made commitments to using them. Sometimes they might like to, but support is part of being in the systems business, something that Microsoft hasn't learned yet. We've been fielding customer questions for several years that ask, "If Microsoft could drop OS/2, how do we know they're serious about (insert your favorite: Windows NT, Windows for Workgroups, or whatever)." That meant a long period of hunkering down, eating humble pie, and making OS/2 work. That period ended when OS/2 2.1 finally shipped. At last, a robust, multitasking, multi-threaded operating system.

It certainly was no Slenderella, but in the meantime, customers

were buying bigger machines, memory prices (except for the temporary upward blip associated with the raw-material fire) were down, and you needed a lot of room for the GUI and applications.

Almost since the very beginning of OS/2, customers have been writing custom vertical-market applications, especially in the large customer accounts (but also in smaller ones, generally with the help of consultants and systems integrators). It is the roll out of these applications, which will ultimately require the use of OS/2 on thousands and perhaps even millions of desktops, that is the real future of OS/2. Hundreds of organizations and thousands of applications are involved in this process. The coding of an application, once started, is likely to continue.

And there's NT

On the other hand, the beginning of the Windows NT market has caused concern and confusion. Microsoft has suggested to developers and customers that they should stop work on OS/2 projects and move over to NT. Customers won't do that. Developers, in fact, are planning to bring a good deal of OS/2 mainstream software to market this fall and winter. OS/2 has been selling at a steady rate, which seems to promise that the OS/2 market will be larger than the NT market for at least several years. Developers follow markets.

One great concern, however, is how to plan for the future. Customers wonder if their *next* client/server project should be NT-rather than OS/2-based.

Developers ponder their resources and reallocate priorities, trying to outguess the market. The issue here is timing. While NT may be available, experienced developers and users know that it takes time to craft an operating system. Adding Windows to DOS and getting it right took seven years. Getting OS/2 from a shipping product to a marketable product took almost six painful years. NT may not take that long, but it's not going to be a mainstream product overnight. New operating systems are for crusaders with a mission, risk-takers, and fools. Crusaders use whatever they have to, taking chances if necessary, to accomplish their mission and get to their Holy Grail. Risk-takers do it for the thrill. (I traded a few barbs

with a friend as I wrote this column, laughing about our efforts to use our first-generation Apple Newtons, and thinking ahead to the day when we'd look back and award ourselves medals as early users.) Fools do it because they don't know what they're getting into.

Most users will avoid using NT until they see successful projects in similar environments, preferably in their own industry, and suitable tools and applications to support their efforts. Users don't like to roll their own or take too many chances.

Lots of vendors have signed up to build NT software, especially at the server level. It looks good in the news and you don't have to actually do anything until NT looks like it's going somewhere. Remember all the commitments to OS/2 and how they melted when the first round of marketing was less than successful? Commitments aren't code.

In fact, many analysts have noted

a significant upsurge in OS/2 sales after NT announced, as users looked at the product, realized that it would take a while to settle in, and decided to buy something a bit more mature. The choices were OS/2 and UNIX and most of the commercial market continues to select OS/2.

We haven't even gotten to the next step, where IBM starts to roll out the Taligent goodies into OS/2 as a kind of red carpet migration path into the object world of the future. Orderly evolution, not revolution, is the IBM Customer Way and you're about to see it one more time. It ain't as exciting, but it's a lot less dangerous and disorderly.

Amy D. Wohl is president of Wohl Associates, a consulting firm specializing in office information systems, personal computing, and end user computing. She is also editor of the Trendsletter, a monthly newsletter on computer industry trends.

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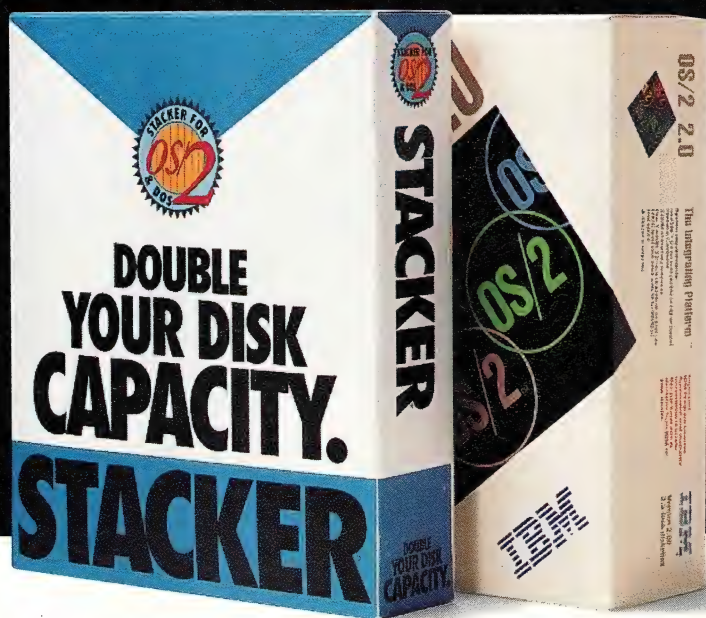
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Words and Pictures

A FIRST LOOK AT WORD PERFECT 5.2 AND ULTIMEDIA BUILDER/2 BY BRIAN PROFFIT



WORD PERFECT 5.2 FOR OS/2

OS/2 users who wanted Word Perfect but didn't want to run a Windows session have been stuck with the character-based Word Perfect 5.0 for several years. Word Perfect 5.2 for OS/2 finally brings the power of a graphical user interface (GUI) to OS/2's Word Perfect users. This power doesn't come without a price, of course. For the absolute best speed, character mode is still superior. But the productivity advantages, particularly for new users, far outweigh the performance hit, and Word Perfect included a Draft Mode for faster response when required. The use of button bars can make GUIs worthwhile by themselves. Having so many key functions available at a single click is nice, and the ability to customize the button bar and select from more than one configuration allows users to set the system up for their own particular needs.

Yes, Word Perfect 5.2 for OS/2 is, for the most part, simply a port of the Windows version using Micrografx's Mirrors technology, which adds a few drawbacks, including a performance hit. Still, as we will see, features such as registration of Word Perfect objects with the Workplace Shell take advantage of OS/2's special abilities. By the way, the performance has improved a good deal from the beta releases. Those who gave up on this product because of the performance problems in the early versions would be

well advised to take another look at the final release.

Getting started

Installation is smooth, and while the number of *readme* files may seem excessive, the division by topic saves the user from having to page through several screens of, say, network installation instructions if they are in a stand-alone environment. The installation program encourages you to install the Word Perfect printer driver. That's fine, but remember that driver will only work with the printer's fonts. To use the Adobe Type Manager fonts included with OS/2, and any other ATM fonts you may have installed, you should use the OS/2 printer driver.

Either way, the displayed text just

isn't as legible as with Word Perfect for Windows. Bringing up a WPWin session beside the WPOS2 session makes this obvious, as shown in Figure 1. The printed output looks fine, but for many, the display type quality alone may be reason enough to stick with the Windows version in a Win-OS/2 session.

OS/2 exploitation

Word Perfect 5.2 uses OS/2's multithreading to provide background printing. Thus, the user is returned to the editing screen immediately after requesting the hardcopy, rather than having to wait for the print spooler. Even Word Perfect 5.2 for Windows doesn't offer this feature. Word Perfect 5.2 for OS/2 also expands on its Windows counter-

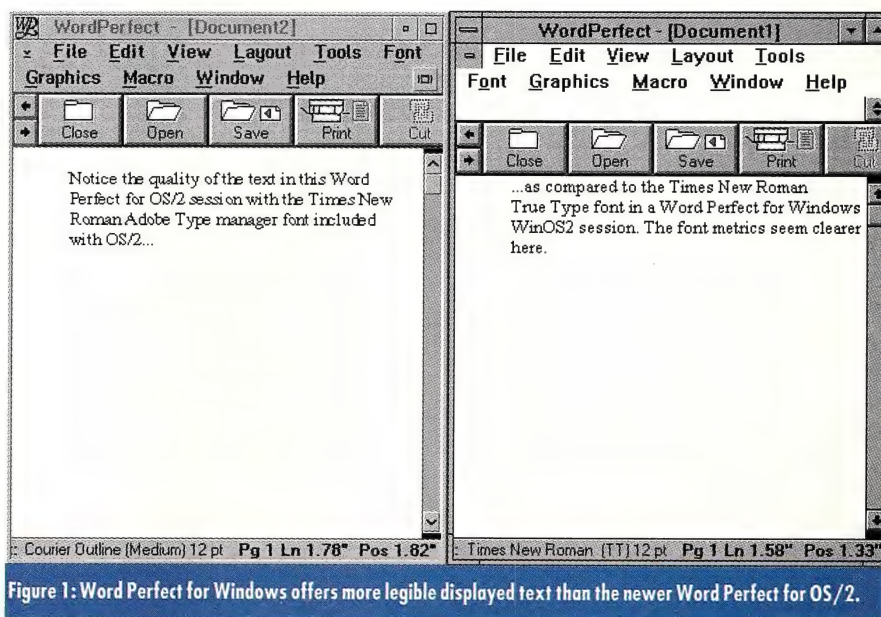


Figure 1: Word Perfect for Windows offers more legible displayed text than the newer Word Perfect for OS/2.

part by including support for OS/2's High Performance File System (HPFS). Anyone who uses a lot of files quickly tires of filenames like *os2mag1.wp*, *os2mag2.wp*, and so on. Word Perfect's HPFS support allows more creative names like *The review I wrote of WP for OS/2*. There's a catch, though. As a vestige of the 8.3 file name convention, Word Perfect only recognizes the first three characters after the first period it finds. So, while *Chapter 2.31: Integration into the corporation* is a perfectly legitimate HPFS filename, Word Perfect would only see it as *Chapter 2.31*.

Word Perfect for OS/2 does an interesting thing to help with migration. It registers a DLL with the Workplace Shell (WPS) to sit in the background and monitor objects, and creates a new Word Perfect 5.2 Document WPS object type. When you open a folder, the DLL peeks at each of the files in the folder. If it finds a Word Perfect document, it registers it with the WPS as such, and changes its icon to the Word Perfect document. At that point, you don't even need to start Word Perfect or drag the document and drop it onto the Word Perfect icon. Simply double-clicking on the document will start Word Perfect with that file in the edit window. However, the ability to drag and drop helps you to open multiple documents. Just select all you want to open, and do a single drag onto Word Perfect. Each will be opened into its own window.

The documentation says that you can drop one of the included Word Perfect templates onto the Word Perfect icon to start Word Perfect with that template in the editing window. Before it can work, though, you must first move the template out of the Word Perfect folder so the Workplace Shell registers it as a Word Perfect object.

Another interesting GUI action is inserting documents. If you know you are going to want most of one

document included in another, opening the document to be included and using cut and paste may not be the most efficient technique. As you are editing a file, drag another document into the Word Perfect window while holding <Ctrl+Shift>. The existing document will be inserted into the new one.

Word Perfect also uses the WPS to simplify printing. Any Word Perfect document can be printed by dragging and dropping the document onto the OS/2 printer. A copy of Word Perfect will be loaded to print the document with the default settings and send it to the printer automatically. Attempting to drag and drop several documents onto the printer, however, generates the informative pop-up *An error occurred - error message 753 not found*, followed by OS/2's SYS3175 message as Word Perfect dies.

Bundled goodies

The embedded Grammatik 5 grammar checker works well, providing a variety of advice on ways in which you might improve the wording of your document. One wonders, however, what sort of testing it went through. Upon encountering "OS/2" in a document, Grammatik stopped and reported that "OS" was "the British spelling of the word." It doesn't provide a clue as to what word Grammatik thought this might be the British spelling of. It then reported that the "2" should have been spelled out as "two." I'd recommend turning off the spelling rule class in Grammatik and just using the spell checker in Word Perfect. Why create two sets of user dictionaries on your disk? (By the way, the Word Perfect spell checker doesn't recognize the word "Grammatik," either.)

With regard to the Grammatik documentation, the first clue as to its usefulness is on page 1. The installation instructions tell the user to be sure that a required DLL is in *c:\os2\dll*. Actually, the installation

procedure puts the DLL in the *wpcos2* directory (as it should, by the way—vendors should stay out of my OS/2 directories), which it adds to the *LIBPATH*.

Glee or flee?

Word Perfect 5.2 for OS/2 is a solid application that will handle most word processing functions. People still using Word Perfect 5.0 would be well advised to consider upgrading to this product. If you already have a good word processor, though, (whether for Windows or OS/2) you might prefer to wait a few months (according to Word Perfect Corp.) and evaluate the OS/2-native version of Word Perfect 6.0.

ULTIMEDIA BUILDER/2

Products like Asymetrix's Compel and Macro Mind's Action have begun bringing multimedia authoring to the desktop. Multimedia is an area in which the multitasking capabilities of OS/2 really shine. Synchronizing pictures and sound is quite a challenge for a small computer, as many have found trying to do so with Windows.

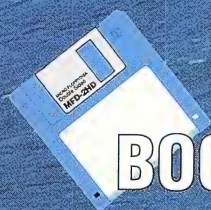
OS/2 has the horsepower to support such applications, and IBM has exploited that power in a series of Ultimedia applications. Perfect Image/2 is an image capture, conversion, and editing application, and Workplace/2 is a multimedia file-management tool, allowing queries across multimedia objects and joins with databases. This month, we'll focus on Builder/2, their presentation authoring tool.

Building stories = writing programs

Builder/2 goes beyond sound-enhanced slide shows, supporting animation and full-motion video. The user can interactively change the flow during the presentation. This can be done via pauses for input, or hot areas sensitive to mouse or touch actions. It also allows information to be retrieved

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from Database Manager, dBase IV, or ASCII text databases, and output text can be dynamic based upon information in those files or user input.

All this can be done because creating a Builder/2 story is really writing a program. The commands are based upon the Audio Visual Authoring/2 (AVA/2) language, a multimedia superset of REXX. Much of the story preparation can be done graphically, with Builder/2 generating the AVA/2 instructions for you, but knowledge of the commands is also required for many presentations. For more detailed processing, AVA/2 can call user-written DLLs.

Getting started

The first step is getting together an appropriate computer system. Anything less than a 486-based machine realistically need not apply. And, while you can create presentations to run at the standard 640-by-480-by-256-color resolution, the Builder/2 application itself requires 800-by-600-by-256 colors minimum, and the tutorial requires 1,024-by-768-by-256-color resolution. The memory requirements are steep—IBM recommends 16Mb of RAM, and specifies 20Mb *available* RAM as optimum. The hard disk needs are quite large as well, since your image files may well be over half a megabyte *each* at high resolutions. Audio takes a lot of storage as well. Depending on the sampling rate, it could be over 20Kb per second of sound. And don't forget the CD-ROM drive. Not just to install Builder/2—many CDs with images and sound clips that can be used in presentations are available.

You should definitely take the time to run the tutorial. It is well designed, and provides a great multimedia introduction to the product. The *readme.doc* gives instructions on how to speed up the tutorial, but the best advice is to copy it all to your fixed disk and run the

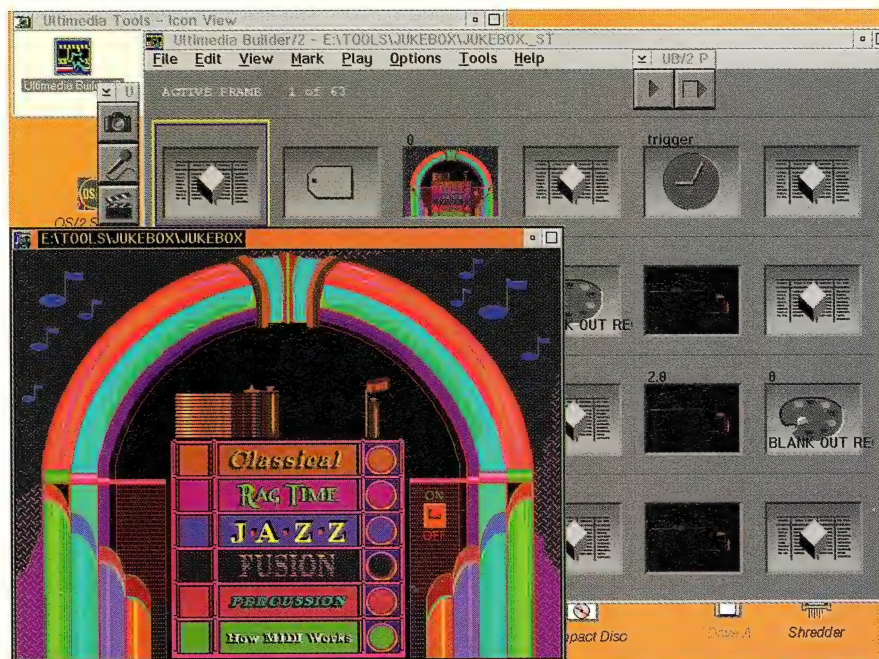


Figure 2: Ultimedia Builder/2 offers the ability to work in multiple-display windows.

tutorial from there. (Note: use the instructions in the *readme.doc* to copy the tutorial. The instructions in the User's Guide on copying the tutorial are incorrect.) Don't try to run other sessions at the same time—particularly Win-OS/2 sessions—or the Tutorial will lock up, generating the infamous “not responding to requests” message.

Lots of features

Builder/2 really does make it easy to create high-quality presentations. Even if you don't want to include sound or full-motion video, this is a valuable package. You can lay out your presentation on what looks like a slide sorter, while viewing the story in another window, as shown in Figure 2. Most presentations can be enhanced just by putting up attractive, pertinent background images onto which you display your text.

Many more dissolve options are available to smooth the transition between images than the standard “barn doors” included in basic presentation packages—not as many as you'd find in a TV studio, but enough to allow for a lot of creativ-

ity. Two sound channels are supported to allow, for example, music and narration to occur simultaneously from two different audio files. The two channels have individual volume controls and a balance control. There are some restrictions, though. Two MIDI files cannot play simultaneously, nor a MIDI and a PCM (.wav) file. And, according to IBM Technical Support, their M-Audio adapter is the only one that can play two .wav files simultaneously, which leaves you with the task of using the Digital Audio applet in MMPM/2 to mingle narration and music into a single file before pulling that file into a story.

Users can branch through presentations in progress through the use of triggers—areas of an image that are designated as hot spots, which cause a specific action to take place when they are clicked on. Animation is implemented via “sprites,” a concept that has been around for a long time. It's amazing that my 66MHz 486 with 16Mb and VLB video has to labor so hard to do what my Commodore 64 did so easily 15 years ago, but Intel chose not



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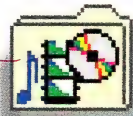
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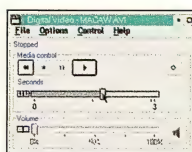


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to provide hardware support for sprites in their architecture. A significant limitation in Builder/2 is that sprites can only travel on a straight line from start to finish. More complex paths can be generated as a series of straight line events, but it is a needlessly laborious process.

As with most products, Builder/2 rewards those who get nosy about the contents of the distribution media. The CD called `\tools` contains a subdirectory, which contains additional sample stories and images, including a BlackJack application. (I ran this only as an exercise to verify the interactivity of the product, of course.)

Builder/2 actively supports multitasking, allowing you to preload images while other activities are taking place, so when the time comes to display the image, it is already in memory and available. It also works with sounds, fonts, and dissolve methods. This ability can prevent delays in presentations in which several things take place in rapid succession—particularly if some of those things are large image loads from a slow device, such as a CD-ROM or network. Named pipe support is included to enhance network communication.

As you can see, stories (programs) can get large and complex. As with other programming environments, debugging aids are available, including the ability to set breakpoints, display the value of variables, and single step through the program.

It's not as difficult as it sounds. Builder/2 uses the Workplace Shell to help simplify things. You can drag-and-drop image, sound, and video files into your story. This method works well with the companion Workplace/2 multimedia file organizer, which shows thumbnail images so you can preview them and then drag them directly into your presentation. Builder/2 also registers a new Story object type

with WPS and associates Builder/2 stories with itself.

But...

Surprisingly, Builder/2 doesn't support Graphics Interchange Format (GIF) files, which eliminates thousands of images from the user's repertoire. Shareware programs to convert from GIF to BMP format are available, but IBM should not have required that step.

IBM once again follows the old adage, "Do as I say, not as I do." While they preach support of the High Performance File System to other software vendors, filenames in Builder/2 are restricted to 27 characters *fully qualified*. So, not only must your filenames be short, they must be close to the root directory to be recognized.

Many of the sample sound files were created with IBM's Audio Visual Connection, which stores sounds in a format that cannot be played on the two most popular sound cards supported by MMPM/2: the Pro Audio Spectrum 16 and the Sound Blaster. That's IBM's subtle way of saying you should use their M-Audio hardware rather than the industry's *de facto* standards. To get around this limitation, you must use the Multimedia Data Converter in MMPM/2 to convert the `_au` files to `.wav` files.

It is really great that IBM included a Mediasource sample CD-ROM from Applied Optical Media. It has a number of images and sounds that can be used in presentations. However, they are the recipients of the first Brian's Bloopers Award. The cover label in the CD case has the installation instructions—for Windows 3.1 only. That's right, the installation program and the software to let you search through the images and sounds must run in a Win-OS/2 session. Those who were sufficiently devoted to OS/2 to have decided to save the disk space and not install Win-OS/2 have to manu-

ally wade through files with clever names like `\ur1\ur1b13a5.dib` to try to locate images.

Glee or flee?

The high hardware requirements are not the fault of Builder/2, nor of OS/2. In fact, Builder/2 and OS/2 both do a lot to make multimedia viable on desktop systems—certainly more so than with other platforms. The suggested retail price is \$345, and the run-time modules for Builder/2 may be distributed freely with your presentations without paying royalties to IBM. At this price, Builder/2 is an effective presentation tool—even if you don't need all the multimedia glitz.

Brian Proffit has been in the computing industry for 20 years. He was part of IBM's OS/2 team, left IBM to become the director of PC Week's Corporate Labs, and is now the President of Visionary Research. Brian is the author of two books on OS/2: OS/2 Application Development Tools, and OS/2 Inside & Out. He has written for several publications, including IBM Personal Systems Developer and PC Week. He can be reached at CompuServe 75300,1466, or Internet 75300.1466@compuserve.com.

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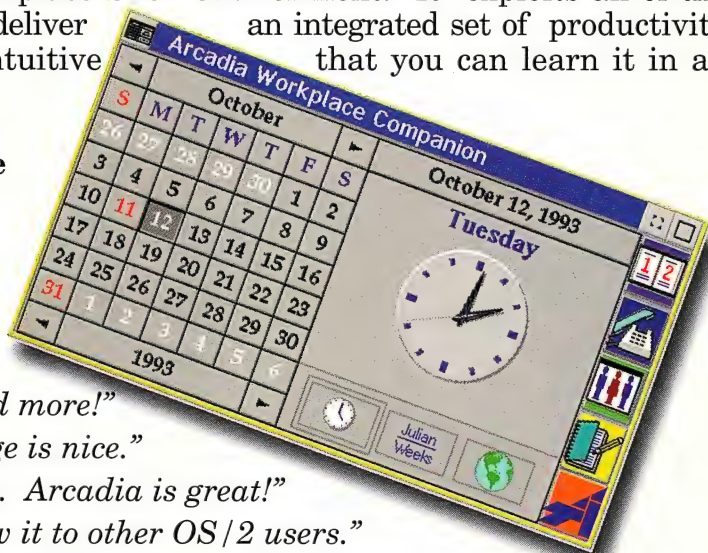
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- PC Magazine, September 28, 1993

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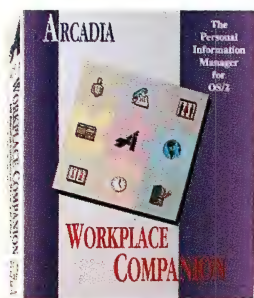
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The Contact List helps you keep track of important contacts, relatives and friends. A subset of the Phone Book, you can use the Contact List to gather all of the people that you contact frequently. Its compact size lets you keep it open without taking up a lot of space on your desktop.

NOTEPAD

The Notepad module is a free-form notebook that allows you to store almost any type of information you desire. One or more pages can be inserted anywhere in the Notepad. Each page may contain either text or graphics.



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It's taken six years,
but OS/2 is
ready for
prime time.
by Brian
Proffit



Why OS/2 2.1?

OS/2 has come a long way since version 1.0 was first announced back in 1987. According to IBM, OS/2 2.0 sold more than two million copies, and version 2.1 stands to expand on that achievement quite a bit.

For those familiar with OS/2, version 2.1 has a lot of new features, including a 32-bit graphics engine, heightened support for SVGA adapters and displays, support for Windows' Enhanced Mode applications, improved performance, and built-in multimedia support.

We'll detail these features and more a little later, but for many people, the question isn't "Why OS/2 version 2.1," as much as "Why OS/2 at all?" IBM has improved their marketing support for OS/2, but an understand-

ing of the benefits of OS/2 is unclear in the minds of many. That's a real shame, because some people will wait for products, such as Microsoft's oft-promised Chicago, when they could be reaping the benefits of a next-generation operating system today.

From the very beginning, OS/2 has offered several features that are either difficult or impossible on DOS-based platforms such as Windows. As early as the mid-1980s, people were becoming frustrated with the need to close files and end a program before they could start another. IBM's Topview, and later Quarterdeck's DESQview, were early efforts at allowing users to load more than one program at a time. The memory constraints of DOS, however, meant that those programs had to be quite small. And, while more than one program was loaded, only one was actually running at a time. Early versions of Windows had these same restrictions.

Later versions of Windows added a limited ability to run more than one program at a time through a technique called "cooperative multitasking." The term is derived from the fact that, for more than one program or task to run at the same time, they must cooperate. Each program must deliberately yield the system to another for multitasking to take place. This dependence upon the altruism of software developers is the reason that Windows users often find themselves looking at an hourglass, unable to do anything else, while an application monopolizes

their system. Windows is limited by the functions that the underlying DOS operating system provides.

From version 1.0, however, OS/2 has provided "preemptive multitasking." As the term implies, OS/2 takes control and preempts applications that try to monopolize the system, allowing other programs access to the computer, so that all of them

one of two ways. First, if a program accidentally writes over the storage space of DOS or Windows, the system can totally lock up. Second, if a program tries to write into the memory of another program, Windows may detect it and present the infamous Unrecoverable Application Error (UAE), which was renamed a memory-protection error in

Windows 3.1.

No operating system, however, can guarantee that software developers will write totally bug-free programs, and OS/2 programs can also generate memory-protection errors (the Trap D errors in version 2.0, and SYS3175 errors in version 2.1, for example). The difference is in how the operating system responds to these errors.

Areas of main

memory are accessed by specifying the address into or from which the information is being moved. All software runs within a portion of memory known as its address space. When Windows is loaded, it claims all available memory from DOS as its own address space. All programs the user loads are run within that same address space. The result is that if one of these programs generates a memory-protection error, the entire Windows address space can be corrupted. These errors can often bring up the message box advising the user to "Close all applications, exit Windows, and restart the system," which can clearly cause a significant loss of productivity.

OS/2, in contrast, exploits the capabilities of 386 and higher processors more fully by using a set

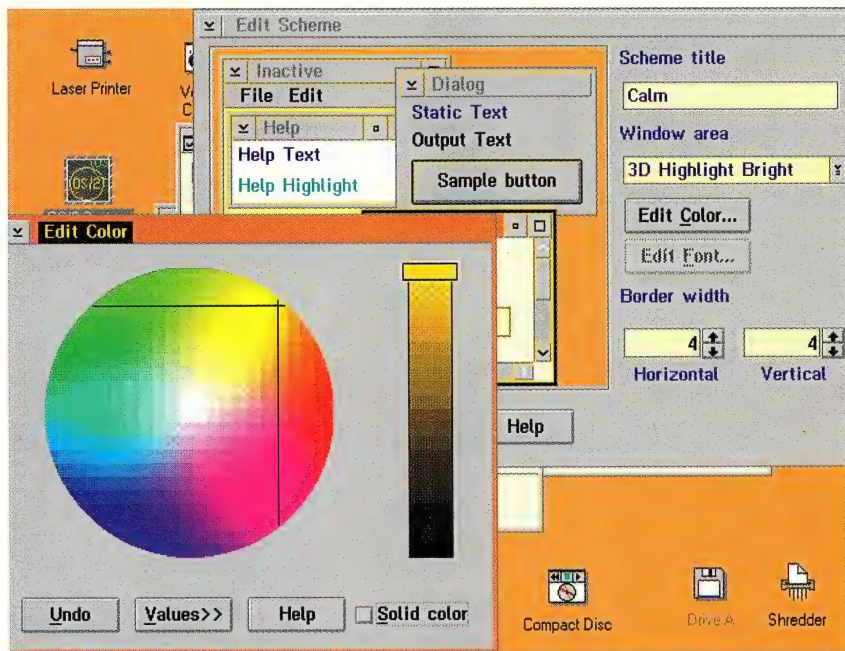


Figure 1: Using one of the New Schemes, you can customize virtually every part of the desktop.

continue running more smoothly. More importantly, it has a dramatic effect on the amount of time the user is forced to wait before taking another action. As IBM says, the OS/2 clock icon may not be as attractive as the Windows hourglass, but you'll be seeing a lot less of it.

How memory is used

Another drawback of DOS and programs that run on top of it is the memory architecture. Programs such as Windows must go through elaborate schemes to subvert the DOS architecture and run multiple programs (this also makes more work for software vendors writing to those platforms). This method can cause several bad things to happen, which usually appear to the user in

of road maps called "descriptor tables" to load each program into its own unique address space. That way, if a program bombs, only its own address space is corrupted. The rest of the user's programs can continue to run normally. You simply close that particular session on the OS/2 desktop. This is what IBM refers to as Crash Protection.

By the way, one of the enhancements IBM put into version 2.1 is dynamic DOS Protected Mode Interface (DPMI) memory management in DOS sessions. In version 2.0, the DOS session was automatically allocated the entire amount specified in `DPMI_MEMORY_LIMIT` when the session began, leading to excessive swapper file sizes. Version 2.1 allocates the DPMI memory dynamically, as the application asks for it, up to the limit specified. Thus, it only grows as large as absolutely necessary.

Exploiting the power

For years after its introduction, operating systems treated the Intel i386 as a fast 286 processor. Starting with version 2.0, OS/2 became the leading desktop operating system that took advantage of the special features that Intel put into those processors and their successors. The memory-addressing features are part of that power. Another part is the ability to create "virtual machines" within your computer. The Intel processor supports areas which look as though they were separate computer processors. OS/2 uses this technique to provide support for DOS applications. Using it, even non-OS/2 programs get the benefit of separate address spaces. If one crashes, the rest of the system (usually) keeps running. OS/2 supported DOS sessions in the 16-bit 1.x versions one session at a time and was rather limited. The 32-bit 2.x versions use this new technology to support Multiple Virtual DOS Machines (MVDM).

Another benefit of this separation

OS/2's MVDM

ABILITIES ALLOW YOU TO EFFECTIVELY HAVE SEPARATE CONFIG.SYS AND AUTOEXEC.BAT FILES FOR EACH DOS SESSION.

is the ability to configure each DOS session separately. Running native DOS can cause users a lot of headaches. Some programs need specialized device drivers to be loaded when the system is booted. But those device drivers take memory, and other programs may not have enough room to run if the device driver is loaded. The poor user has to change the *config.sys* and/or *autoexec.bat* and reboot the system just to be able to switch from one program to another.

OS/2's MVDM abilities allow you to effectively have separate *config.sys* and *autoexec.bat* files for each DOS session. No need to edit files and reboot the system—both programs can run simultaneously, with their own parameters. By the way, you'll find that the memory problems many programs have under DOS will disappear under OS/2. Version 2.1 can make more conventional memory available to DOS applications than even programs like NetRoom can squeeze.

OS/2's processor exploitation also includes support for the 32-bit memory model. Essentially, this means that as the computer is processing your information, it can work on pieces twice as large at any one time, which cuts the time required for some operations in half. Practically speaking, this means that your applications can more easily and quickly process larger documents or worksheets. For software vendors, it means they can write larger programs and, because programming for the 32-bit memory model is actually simpler, deliver applications more quickly.

With version 2.1, OS/2's

Graphics Engine, the underlying code that supports virtually all of the Workplace Shell, is 32-bit. A number of the display drivers are now also 32-bit programs.

OOUI or GUI?

Some debate is beginning in the industry over the values of an Object-Oriented User Interface (OOUI) vs. a Graphical User Interface (GUI). To a large extent, OS/2's Workplace Shell is both. Every item on the WPS desktop is an object (in fact, so is the desktop itself), giving you a lot of abilities you couldn't get otherwise. To begin with, you can inspect the properties of any object just by pointing to it and clicking on mouse button two. Opening the object's settings notebook reveals a variety of things that the user can modify, including the name and even the icon associated with the object.

Speaking of associations, each object will have an associated action that takes place when that object is double-clicked. This action will vary, based on what is appropriate for that object. If the object is a folder, it will be opened. If a program, it will be executed. Double-clicking on data files, however, is where the true ease-of-use gains begin. The action taken then is based on the object's type.

The WPS understands several different object types upon installation, such as Icon, Plain Text, and Digital Video. Each of these types has an associated program, such as the Icon Editor, the System Editor, or the Multimedia Presentation Manager/2 (MMPM/2) Digital Video Player. Applications you install, such as DeScribe or Word Perfect for

OS/2, can register new object types with the WPS, and associate those types with their program. Files saved from those applications will automatically have that object type, so double-clicking on the file will load the program and open the file all in a single step.

OS/2 allows you to change these associations, so that if, for example, you prefer the Enhanced Editor to the OS/2 System Editor, you could make it the application that gets loaded when double-clicking on Plain Text files. Additionally, you can set the system to associate files based on their name or extension, rather than object type. You could ask OS/2 to pass, for example, all *.OS2 files to the Enhanced Editor.

Organizing your work

The Workplace Shell expands on the Windows and OS/2 1.x concept of group windows to contain similar types of program icons. File objects can now be gathered together into folders on the desktop, where they can be operated upon directly. In fact, the underlying directory structure of the fixed disk can become almost irrelevant and transparent for many operations. A new file can be created simply by moving the Data File template from the Templates folder to the desktop, or into a new folder containing, for example, Correspondence, or Work Items. OS/2 can take care of the actual directory automatically. You can move or copy objects/files easily, by dragging and dropping them into the desired place.

Sometimes, though, having a copy of an object in two different places isn't the best answer. A change of settings on one of the objects won't affect the copy. Often a "shadow" is more appropriate than a copy. Holding <Ctrl+Shift> while performing a drag/drop will create a shadow of the original object. The shadow is linked to the original, so that changes to one are reflected in the other. Changes in

name or association, for example, are immediately made by the WPS in both places. A shadow is simply a representation of the original object in another place but without requiring the additional disk space that a copy would need. (Macintosh users will recognize this function as an "alias.")

Building on these options, WPS offers the concept of a "work area." A work area is a folder in which the objects' actions are more tightly linked. Suppose, for example, that you have several files involved in a particular project. You have spreadsheets to track costs, documents (such as the original proposal and tracking memos), and perhaps a project-management file. Suppose further that your company is financially sound enough to have more than one project. Keeping all of the files associated with a project in a single folder certainly simplifies finding them. You just open the folder, as opposed to looking through the data subdirectories for your spreadsheet, word processor, and project-management packages. Looking at the information is as easy as double-clicking on the desired files, since they're associated with the appropriate applications.

The best part comes when the phone rings and your boss has a question about another project. Simply minimize the work area's folder and all of the objects in that work area are minimized automatically! And not into a myriad of separate icons cluttering the desktop or in the Minimized Window Viewer; you have just the work area's icon. Open the new project's work area and find the answer for your boss. Then, when you're ready to return to your work, restore the work area icon, and all of the open objects will be restored to their original location and size with that single action. (At least this is the theory. IBM has acknowledged a few bugs to work out in this feature before it reaches its full potential.)

Command-line junkies grudgingly admit that WPS associations make double-clicking on an icon easier than changing directories, keying in a program name, then loading a file. The problem, they say, is locating that icon in the first place. Well-designed work areas remove that problem.

Sprucing up your office

Working in an ugly, disorganized office is bad for productivity. No less harmful is a poor computer interface. Unfortunately, what is beautiful to one person is chaos to another. OS/2's Workplace Shell brings new levels of flexibility and ease to the user's ability to modify the screen's appearance. At first glance, the WPS appears a bit boring to the newcomer. Actually, IBM paid some consultant a lot of money to determine that gray was a pretty neat color for a screen. Well, theoretically, the reason behind this exciting choice is that the default colors present a reasonable mix for most people, while still being clearly distinguishable by those that are color blind. Unfortunately, many people leave those colors intact, leading those who see their display to believe that OS/2 is, indeed, dull.

In the System Setup folder is an object labeled the Scheme Palette. Opening this object reveals several predefined color patterns from which you can select. Selecting a scheme and dragging it onto a window will cause that window to change to the scheme's colors. Holding the <Alt> key while dropping the scheme onto the desktop will cause the change to be made for all windows.

But the WPS is even more flexible. Open one of the New Schemes, and you will find that you can create your own, customizing virtually every part of the desktop as shown in Figure 1. Move the pointer over the color wheel, and observe the changes in the sample window shown. Then, drag your new

scheme onto the desktop and impress your friends with your creativity.

But that's just the colors. Why not work on the displayed text as well? The Font Palette, also in the System Setup folder, let's you do that just as easily as you changed colors, simply by dragging a particular font onto the desktop. This is also where you install new fonts for OS/2. Any Adobe Type Manager Type 1 font can be used—not only by the Workplace Shell, but by your OS/2 applications.

To people who have spent a lot of time with GUIs, the Workplace Shell may seem too "different" for their tastes. OS/2 even has an answer for them. You can change the desktop to look like OS/2 1.3 or Windows. The documentation describes the use of the MAKEINI command to convert the included resource files into a new desktop look. But don't rush into the change; like all new software, WPS can take a week or so of regular use before it really becomes comfortable. Once you get used to an OOUI, chances are you won't miss a GUI.

What about existing programs?

Handling existing programs is, perhaps, OS/2's greatest strength. Version 2.1 finally fulfills IBM's promise of a "better DOS than DOS." As we've seen, OS/2's memory management, MVDM support, and separate address spaces all contribute to OS/2 being the superior platform for running DOS applications. The few DOS applications that don't run with the built-in DOS emulation can still be supported through OS/2's unique ability to open a session from a DOS boot disk. Programs that require some special feature of DOS 1.0 are no problem—just put a DOS 1.0 boot disk in the drive and open a DOS from Drive session.

Now that 2.1 supports Enhanced Mode applications, the same can

For many people, THERE'S NO NEED TO SEE WHAT OS/2 APPLICATIONS ARE AVAILABLE. THEIR EXISTING APPLICATIONS WORK BETTER TOGETHER ON OS/2 THAN ON THEIR NATIVE PLATFORMS

nearly be said for Windows programs. In fact, OS/2 can run some older Windows applications that Windows 3.1 doesn't support, although version 2.1 has joined Windows 3.1 in no longer supporting Real-Mode applications. In general, the majority of Windows applications will run on OS/2. Performance is a bit of a mixed bag. While many applications run a bit more slowly on OS/2, some actually run more quickly on OS/2 than on Windows.

At first glance, this claim seems impossible. After all, for the most part Win-OS/2 is unmodified Windows source code, running under OS/2. The extra layer of software, which works against performance, is offset by several factors, including two in particular. Paul Giangarra, Lead Architect for OS/2 2.1, reports that IBM gained a 10% improvement in performance by recompiling Windows with a compiler other than Microsoft C.

Another gain comes from the underlying file system. OS/2 has a faster 32-bit version of the File Allocation Table (FAT) system, which DOS and Windows applications gain from automatically. As long as you restrict yourself to 8.3 filenames, DOS and Windows applications can also access files using OS/2's High Performance File System (HPFS). Particularly in large partitions, HPFS can bring a marked performance increase, and isn't nearly as subject to the disk fragmentation problems of the FAT system.

A big factor in the performance of DOS and Windows applications is how they are run. If they are run in their own full-screen session, the

performance is guaranteed to be better than if they are run in windows on the WPS desktop—the so-called "seamless" mode. Part of the speed penalty in seamless mode is one of perception. When you start a seamless application, OS/2 has to load a copy of the Win-OS/2 code first, then load the application. One way around this operation is to change the settings of the Windows application so that it does not run in a separate session. Then, after the first Windows application is loaded, all subsequent applications can be loaded immediately, sharing the version of Win-OS/2 that is already in memory.

This configuration can make a dramatic difference in load time. To avoid the delay in loading the first application, you can setup OS/2 to load a Windows application during system startup. Bringing in a small, innocuous application, such as the Windows Calculator, doesn't make a noticeable difference in system boot time, but greatly speeds loading subsequent Windows applications that aren't set for separate sessions. Take care, though. Loading several Windows applications in the same session means using the same address space, defeating part of OS/2's program protection. Even though they are in separate windows on the WPS desktop, if one of them crashes, it will bring down all other Windows applications in the same session.

Regardless of sessions, a big feature of OS/2 2.1 is the ability to cut and paste between DOS, Windows, and OS/2 applications. Copying the jet from DOS Flight Simulator into an OS/2 DeScribe document is as easy as pointing and clicking.

Putting all these features together, for many people there's no need to look and see what OS/2 applications are available. Their existing applications work better together on OS/2 than on their native platforms.

Built in applications

Another point often lost in the operating system wars is the number of useful programs that are built into OS/2 2.1. Often referred to as "applets," these may not be shrink-wrapped products, but they allow users to get some real value from OS/2 immediately after installation. One of the most valuable parts is the set of linked productivity applications that make up a respectable entry-level Personal Information Manager (PIM) all by themselves. The Activities List, Alarms, Calendar, Daily Planner, Database, Monthly Planner, Planner Archive, To-Do List, To-Do List Archive, and Tune Editor (well, you want high-quality alarms, don't you?) are all fairly integrated into a cohesive set of utilities that run the gamut from task management to calendar management and contact management, even including automatic telephone dialing. These features may not compete with shrink-wrapped PIMs, but they're great tools included with OS/2.

The PM Terminal program is a subset of Softronic's shrink-wrapped Softterm Modular offering. For many people, PM Terminal will be all they need for asynchronous communications. The main things missing from this bundled version are support for ZMODEM, IND\$FILE, and CompuServe Quick-B+ protocols. Still, the XMODEM, YMODEM, and Kermit support can serve most needs. Likewise, the list of terminal emulations available may look short, but ANSI, IBM 3101, DEC VT52, and DEC VT100 will satisfy the vast majority of people's needs.

Speaking of communications, there has been a lot of discussion surrounding the removal of the PM

Fax applet that was in the 2.1 beta versions. Realistically, who needs a fax program that can only handle one page? Whether receiving or sending, most of the time you want the first page as a cover sheet. The vendor claims that the applet was written exactly to IBM specifications and they aren't to blame. Regardless, IBM had to either beef up the applet or pull it. They chose the latter.

The Spreadsheet applet is included to provide very basic worksheet functions. Don't expect this to obviate the need for a more functional spreadsheet application. Since a worksheet function is included in the PM Chart applet, those installing PM Chart will probably want to delete the less-functional Spreadsheet applet.

The worksheet functionality in PM Chart (a Mirrors port from Micrografx) is limited as well, but that's not its strong point. First, while you can enter information that way, you're more likely to import the information from a worksheet created with another application. (PM Chart supports several formats, including 1-2-3 and Excel.) Second, converting that data into graphics is pretty easy. You'll also find a number of other features that make this a decent graphics program, although no threat to CorelDraw. Features such as color gradient support, however, make this PM Chart really valuable for software that is bundled with an operating system.

Something we didn't mention in our discussion of customizing the desktop was the ability to change the icons. The Icon Editor, also in the Productivity Folder, allows you to do just that. Don't like an icon? Open the icon editor, load in the offender, and let your creativity go to work. Even better, all those DOS applications that just show up as gray rectangular icons on the desktop can be dressed up. One of the easiest ways is to use part of the

application. Run the application in a DOS window and get the desired image on the screen. Then click on the system icon in the upper left corner of the window, and select Mark. Use the mouse to select the area of the screen that you want to use as the icon and copy it to the clipboard. Then open the Icon Editor and paste the image from the clipboard into the icon edit window. Voila! An easy way to grab a machine gun as the icon for that shoot-'em-up hit, Castle Wolfenstein. Save the icon and go to the application's settings notebook and attach it to the program.

By the way, now that you've got the machine gun icon on the desktop, you can easily use it more than once. Open the settings notebook for another application, for example, what you use to send E-mail to your boss. Turn to the icon page, then drag and drop the machine gun icon into the window. Your E-mail icon will automatically be changed into a more meaningful representation.

Other applets include the ubiquitous Calculator (does anybody really go to the trouble of pointing and clicking at individual numbers?), Pulse (a system-activity monitor), Clipboard Viewer and Picture Viewer. If you want to be able to view much other than OS/2 bitmap (.bmp) format files, however, don't bother with the Picture Viewer.

Version 2.1 also includes many more popular bundled goodies from Windows, including Write, Paint Brush, Calculator, Clock, Sound Recorder, Cardfile, Calendar, Object Packager, Character Map, Notepad, and Media Player.

So long, EDLIN

Two very important entries in the Productivity folder are the System Editor and the Enhanced Editor. The System Editor is a quick and easy way to take care of most of your editing needs. It's relatively small and quick, while still providing the

benefits of a GUI-based editor. This editor is loaded by default if you double-click on a Plain Text object.

For more demanding users, the Enhanced Editor is a complete enough package to make purchasing any other editor unnecessary. For programmers, it includes macro support and syntax assistance for BASIC, C, COBOL, and REXX. For others, its support for formatting and styles can make it an effective word processor.

All this and solitaire too

It has long been said that the most thoroughly tested Windows application is Solitaire. OS/2 comes with its own version, called Klondike. While it doesn't include the cute, unpredictable animation that occasionally causes the sun on the back of the Windows cards to stick its tongue out at you, there is a bonus for those who are using a game as a pleasant diversion from the frustration and failure of their normal jobs. You can cheat.

When you have more time to spend, you should explore the surprisingly good chess program included. You can play against the computer or another person—even across a network. The level of the computer player is variable, and the program also includes a number of nice extras such as separate windows that track move history and pieces captured.

If you're running OS/2 at home, the kids may get some pleasure out of the Scramble and Jigsaw programs, but I haven't yet figured out why even a child would run Cat and Mouse for more than 15 seconds.

There's a hidden surprise, too. Be sure and check the *readme* file thoroughly. Near the bottom are instructions for installing the hidden Mahjongg game. It's worth the effort; it's a good game with well-designed graphics.

Writing your own programs

As the user population becomes

more and more computer literate, they are also looking for ways to add to their applications by doing some special processing of their own. DOS users have Microsoft's Quick Basic. IBM chose instead to use the language that had already become the most popular such vehicle on their mainframe systems, REXX.

REXX is so powerful and easy to learn, you may find yourself writing useful programs the first day. A lot of documentation is included with OS/2, and several books are available for more information.

Multimedia turns the corner

For years, pundits have been saying The Year of Multimedia was right around the corner. The main reason for the delay has been the horsepower required to drive multimedia applications. With the proliferation of high-end 386 and 486 processors and the multitasking power of OS/2, the time is at hand. IBM is taking a big step toward making this revolution happen by including Multimedia Presentation Manager/2 (MMPM/2) in OS/2 2.1.

This ability does come at a price. Entry-level OS/2 machines can't handle MMPM/2 acceptably. A 386SX system will be hopelessly overburdened, and don't expect to get by with an 8Mb system, either. But with a good processor and a minimum of 12Mb, you'll be amazed at what your computer can do. It's also true that most machines still don't come with sound cards and CD-ROM drives, but they're easily and inexpensively available, and a lot of people are installing them.

Another delaying factor has been a certain amount of confusion over the real uses for multimedia. The main goal is to improve communication. A color presentation works better than a black-and-white one. Pictures work better than words. A filmstrip works better than slides. A movie works better than a filmstrip. A multimedia presentation may not make you a better speaker, but it will

certainly help.

MMPM/2 includes modules for digital video, digital audio (including MIDI), and even a CD player. A large collection of sound bites is included, along with some sample movies. (Many more multimedia sample files are included in the CD-ROM version of OS/2.)

Better SVGA support

To benefit from SVGA, you need good display drivers. In earlier versions, OS/2 supported pretty much the same set of displays that were in IBM's hardware divisions' product groups. Support for 800-by-600 pixel resolution and 640 by 480 pixels by 256 colors was very limited. The 1,024-by-768 modes were also based on IBM's 8514 and XGA (and not real well, at that.)

The number of adapters and resolutions supported has grown substantially with version 2.1. There's a trick to it, though. After going through OS/2's normal installation process, you must manually run the DSPINSTL program to install the SVGA support for many adapters. It's described in the documentation, but you have to look for it. The good news is that it's thorough, even recognizing our Cirrus VESA local bus adapter.

All this on a laptop too?

Well, MMPM/2 is a challenge on a laptop, because they typically don't have the necessary memory or sound. But they're getting more memory, and products such as Logitech's SoundMan can provide portable sound input and output through the parallel port.

Other than that, you'll find that everything mentioned here works well on most laptops. In fact, with version 2.1, IBM has included support for PCMCIA adapters. Even better, they countered some of the battery-life problems that OS/2 had in prior versions by including Advanced Power Management (APM) support. The only real disad-

vantage you face is the still-lengthy boot time OS/2 has. It's not really longer than bringing up DOS and Windows, but if you're standing at the airport security gate you might want to put a DOS boot diskette in the machine to speed things along.

Ready for the future

Pen and touch-based systems are just starting to reach the market. OS/2 2.1 is already enabled for these devices and, in fact, IBM is demonstrating OS/2 on its own tablet systems. It's reassuring to know that

the same operating system and interface will be available across all computing equipment you're likely to need.

Bugs and support

Naturally, version 2.1 has some bugs. For the most part, they seem to be minor cosmetic things and, while no official service has been offered yet, IBM has patch files available on CompuServe to address some of them already. Look for the file *21wpsf.zip* in the OS2SUPPORT forum's libraries. In fact, a number of forums on CompuServe are staffed by IBMers. GO IBMOS2 to see the menu of the areas. This is often a better avenue for questions than the technical support lines, since you have the possibility of being helped by all of the other OS/2 users in addition to IBM's staff.

Show time

It seems as though every version of OS/2 has had reasons why people were saying they would wait for the next release. It takes time for operating systems to mature. Don't forget that Windows didn't have a significant following until version 3.0. It doesn't make sense to expect the first release of Windows NT or any other operating system to be really ready for general usage. The spotlights have reached maximum intensity (although some thought they were ready to be extinguished.) OS/2 2.1 is a product that's ready for prime time.

How Fast Can You Run?

Computers that run OS/2 vary widely in performance. Even with the same CPU, you are likely to see a large difference in overall speed. OS/2 systems can be tuned, but how do you know if the changes you make are helping or hurting?

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Brian Proffit was part of IBM's OS/2 team, and left IBM to become the Director of PC Week's Corporate Labs. He is now the President of Visionary Research. Brian is the author of two books on OS/2: OS/2 Application Development Tools, and OS/2 Inside & Out. He has written for several publications, including Personal Systems Developer and PC Week. He can be reached at CompuServe 75300,1466, or Internet 75300.1466@compuserve.com.

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Unless you're multitasking, your computer
can be wasting as much as half your time.

by David Moskowitz

While You Wait

How much time do you spend waiting for your computer after you've asked the PC to perform some function and are waiting for the requested printing to complete, the file to save, the graphics image to display, or the spreadsheet

to recalculate? We were first asked this question back in 1988—and since then have completed 19 studies to determine the perceived waiting time compared to the actual waiting time. The patterns that emerge provide an interesting picture of perceptions about using a personal computer. People in the studies thought they

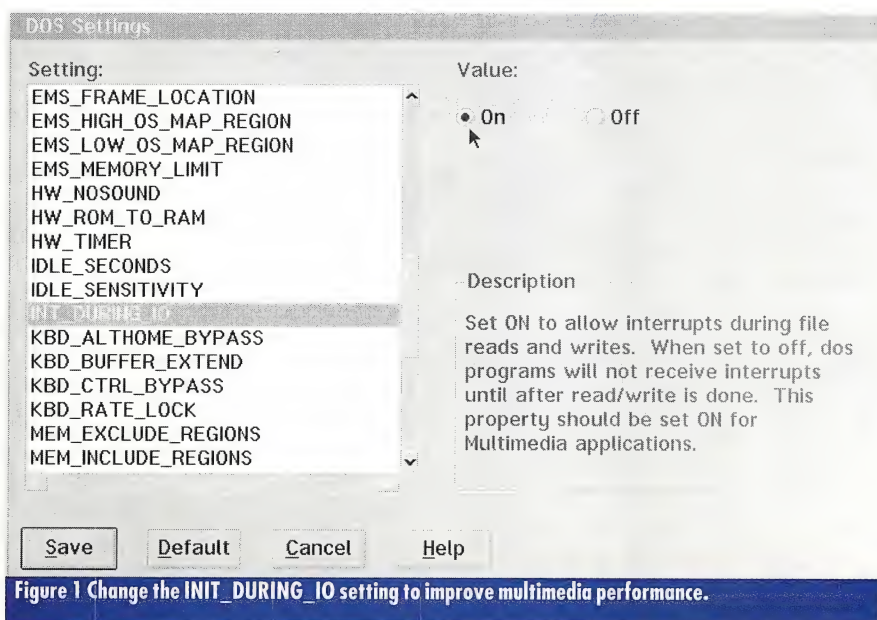


Figure 1 Change the INIT_DURING_IO setting to improve multimedia performance.

OS/2 techno-babble

Every operating system has its own vocabulary. Understanding OS/2's specific technical terms can help you and your colleagues understand some of the issues involved in system tuning and performance.

Threads

All programs have one thing in common—they're made up of a mostly linear sequence of instructions that are loaded into RAM, read by the CPU, and executed. As the CPU moves through the sequence, it is "executing a thread." Each program has at least one thread, but OS/2 programs (unlike DOS or Windows programs) may start separate threads that can be executed independently. For example, a multithreaded database application could start a search while you're still typing the key. A database application that isn't written this way must wait for you to complete your activity (key entry) before it can start the search. If you don't use databases, consider a multithreaded word processor. It could check your spelling, build a complete list of synonyms and an index while you type! Instead of searching the document when you request a spell check or thesaurus, the list of misspelled words could be ready and waiting before you request it.

OS/2, unlike DOS, permits multiple threads of execution within a single program. A single OS/2 program can execute more than one part of its code concurrently. Further, OS/2 allows more than one program to execute concurrently with other programs. The combination of these two types of concurrent execution is called multitasking.

Time slicing

The ability to control and direct the execution of program threads is integral to OS/2. Remember, regardless of the multitasking power of OS/2, most computers have only one microprocessor that can perform only one task at a time. Multitasking is a kind of "sleight of hand" in which it appears the computer is doing more than one thing at a time. In actuality, the operating system executes one thread for a specific time, then it preempts (or interrupts) the thread, stores its data, and then lets another thread use the microprocessor for a while. The amount of time that each thread is allowed to run is the time slice.

Context switching

Each time OS/2 switches from one thread to another, it remembers the state of the one it just left behind. When it is time for the first thread to have its turn again, OS/2 restores everything, so that the thread doesn't realize it was interrupted. This ability to save one thread's state in memory after it is interrupted and restoring the state of the next thread before it resumes execution is called context switching.

Scheduler

The component of OS/2 that decides which thread executes next is called the scheduler. The scheduler normally preempts threads after they have completed their time slice or if they're hanging around waiting for a slower input/output device, such as a keyboard or printer. OS/2's scheduler is preemptive; it has the power to forcibly interrupt threads when they've exceeded their allocated time slice.

On the other hand, Windows 3.1's cooperative multitasking requires that programs voluntarily yield execution control back to the Windows scheduler. Windows cannot take control from a poorly written, unfriendly, or malfunctioning program.

spent no more than 25% of their time waiting for their computers. What we measured was more than twice that figure. Since you're probably already using OS/2, you're aware of some of the advantages of the multitasking environment. In fact, you may have installed OS/2 just for that benefit.

But do you fully understand what OS/2 multitasking is really all about? Do you get the maximum benefit from the environment? Do you know anyone who is using their OS/2 system as if it were a DOS environment—one task at a time? Do you know anyone who uses more than one computer at a time? What is it about OS/2 that increases user efficiency? What is this thing called "multitasking?"

Why multitasking makes sense

Human beings are basically multitasking or able to perform more than one task at a time. We read and eat at the same time and we walk and chew gum at the same time. Multitasking is second nature for us, and it's precisely for that reason that we usually aren't aware of how much time we spend waiting for our computers. We constantly make choices that affect how we handle waiting for the computer and printer. We do it unconsciously, with no thought given to the concept of "waiting." We simply find something else to do.

If we anticipate a long delay, we put off the job until later or skip it altogether. For example, you might have a bunch of E-mail messages to download. You also have a pressing deadline and can't afford to wait while your communications program connects to your mail system and downloads the messages. What if you could reliably set up the computer to retrieve the messages while you finish the report?

Without multitasking, the solution would be multiprocessing: asking your employer to give you two

Adding more memory

IS, PERHAPS, THE SINGLE MOST IMPORTANT HARDWARE FACTOR THAT CAN HELP RECAPTURE TIME.

or more computers. Perhaps you'd have one dedicated to e-mail and another to report writing. Maybe even a third to connect to a printer. Don't laugh—it's been done!

What is multitasking, really

For a single computer to perform multiple tasks at the same time, its operating system must support one of two types of multitasking: cooperative or preemptive. Cooperative multitasking involves an implied agreement between the operating system (or environment) and the program. Every program "cooperates" with the environment by voluntarily yielding control to the system. Each time the system gets control, it determines the next application to execute. Preemptive multitasking takes a different approach. Rather than wait for the program to yield, a preemptive scheduler interrupts the running code after a specified time.

Preemptive multitasking works because of the extreme difference (or mismatch) in speed between the CPU and the attached devices. Today's CPUs can perform 10 to 20 million instructions per second. There isn't a keyboard, mouse, hard disk, printer, modem, video screen, or communications port that can keep up. Most of these devices are several orders of magnitude slower than the CPU. Instead of waiting for the slower device (keyboard input, disk drive, and so on) OS/2 uses the CPU to do something else at the same time; it waits for the device. When the device becomes ready (or, in the case of the keyboard, you type something) OS/2 recognizes the condition and reacts accordingly.

All of this activity proceeds under system control without user or application intervention, which brings us to another advantage of

preemptive multitasking. Because the system controls the execution of applications, a single program isn't permitted to monopolize the computer's processing time.

What can you expect?

Using a preemptive multitasking operating system can reduce the amount of time you spend waiting for your personal computer. In our studies, the average measured "lost time" was typically 60%, roughly 4.8 hours of each 8-hour day!

It doesn't make any difference what you do, it isn't possible to get all of this time back. The best recapture of lost time we've seen was approximately 60% (of the lost time). This figure translates to about 2.7 hours of increased productivity. The average amount of time gained is typically less—about 1.5 hours. The standard caveats apply: your mileage may vary.

It is important to realize that you don't get something for nothing. You should expect to recapture some time, but the amount depends on a lot of factors, including your application mix, the amount of physical memory installed in your system, the system speed, and the amount of hard disk space available. We've already seen two people sitting side-by-side who did basically the same thing and recaptured different amounts of time. So keep in mind that many variables will influence the results.

Memory is the key

Adding more memory is, perhaps, the single most important hardware factor that can help recapture time. OS/2 2.1 is a virtual memory system, which means that the operating system can use more memory than is physically installed in the computer. The system uses the hard disk as a

backup for memory that doesn't fit within the limits of physical RAM. However, since the disk is slower than RAM, any time OS/2 has to retrieve something from the disk, it takes longer than if it was already available in physical RAM. Adding more RAM increases the probability that the needed "piece" will already be in physical RAM, so that OS/2 won't have to retrieve it from the disk.

Consider the following example: it took a client approximately 16 hours to lay out and print a newsletter using Windows. Moving the task to OS/2 with an OS/2 desktop-publishing program reduced the time to 14 hours on the same hardware (an 8Mb 25MHz 486SX system). When they added another 8Mb of memory to the system, the total time dropped to just over 10 hours.

I should mention one other thing: when they saw the effect of the additional memory on newsletter production, they decided to take advantage of OS/2's preemptive multitasking to run a communications session while the page layout was in progress. They discovered they could do both (page layout and communications) without adversely affecting the layout time. Not only did adding memory enable them to save time, it also empowered them to try something they had not considered before. In effect, it also allowed a psychological change, which effected further time savings.

If you know someone who still uses multiple computers to achieve a degree of multiprocessing, you might suggest to them that a single OS/2 system could allow them to do what now requires multiple systems. Be sure you tell them that they should have 12Mb to 16Mb of RAM and a 486 processor. Depending on

their software mix, they might also need a 300Mb-plus hard disk.

For example, it is not uncommon for software developers to use two systems connected by a network. They edit their programs on one system and use the second system to build or test the resulting application. While the "build" is running they can continue to edit program or documentation files. Using OS/2, it is possible to use a single system to perform both functions.

Restructure how you work

Other specific areas will yield time savings. We've already mentioned the possibilities for communications. Like spreadsheet recalculation, once a communications session is started, it should be allowed to run to completion. But you shouldn't have to stop using your computer until it completes. OS/2 allows communications sessions to proceed at full speed in the background. The user can continue to use the computer during time that would otherwise be lost without the preemptive multitasking. It is important to note that any communications session will benefit from this approach. It doesn't make any difference what type of application (DOS, Windows, or OS/2) because OS/2 multitasks every application.

If you spent lots of time waiting for a printer, you should already have recovered some time using OS/2. For example, printing a chapter of a book using a Windows-based word processor takes approximately 14 minutes under DOS-Windows. It

takes almost five minutes before the computer can be used for anything else. In OS/2, under Win-OS/2, using the same word processor and hardware, it takes nine minutes to print, and the computer can be used immediately. OS/2 starts to send data to the printer as soon the system receives a complete page. Windows waits until the entire document is sent to the spooler before it starts to send the document to the printer. In addition, you should expect the OS/2 system to be significantly more responsive during the printing process.

A number of tasks can take advantage of the ability to do more than one thing at a time, including spreadsheet computations, database

provide improved performance. For example, DOS- or Windows-based multimedia applications can benefit from OS/2 multitasking to run smoother in OS/2. If the application sound or video appears to be a bit jerky, try changing the DOS setting (INT_DURING_IO) to improve performance, as shown in Figure 1.

When this setting is enabled, OS/2 creates a separate thread (see the sidebar on p. 46 for a definition of "thread") to handle I/O requests so that the multimedia application can process interrupts. This thread is not part of the DOS or Windows application. Rather, it is a thread the operating system uses to handle I/O requests for the DOS application. In effect, the DOS or Windows application

is fooled into thinking the I/O request is complete, allowing the multimedia application to manage interrupts for audio or video while OS/2 manages disk or CD-ROM I/O. It results in smooth uninterrupted audio and video even in a busy system.

Another DOS Settings parameter, DOS_BACKGROUND_EXECUTION, allows

DOS applications to run in the background. It normally defaults to ON but it is worth checking to be sure. It must be ON for DOS or Windows communications programs, as well as Win-OS/2 dynamic data exchange (DDE).

Is there a point of diminishing returns? Yes! Multiple compute-bound sessions, such as spreadsheets, complex statistical analysis or complex graphics that are run concurrently or multiple invocations of the same task may actually

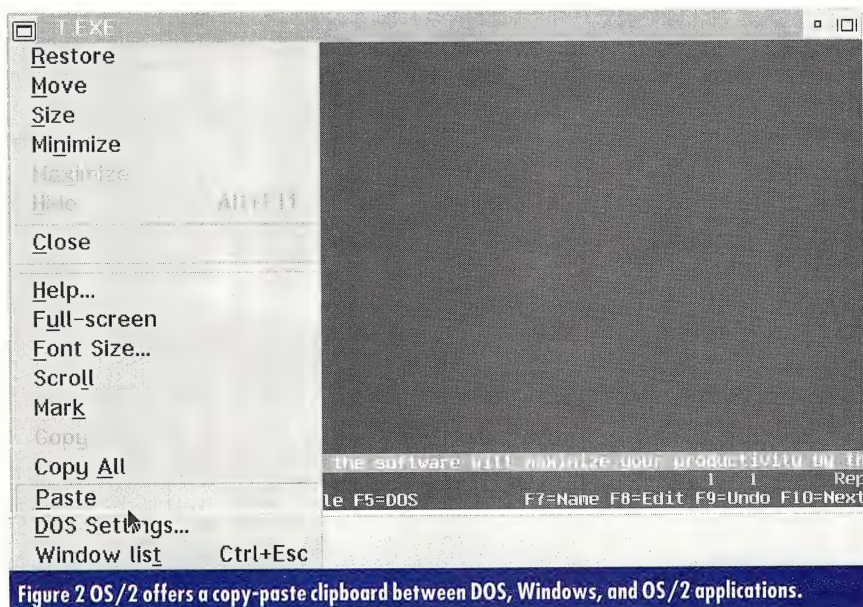


Figure 2 OS/2 offers a copy-paste clipboard between DOS, Windows, and OS/2 applications.

indexing and searching, graphics, file, and device I/O, but the application must support the facility.

Any time you have a long task (such as a large spreadsheet computation or complex graphics screen update) or a relatively slow device (such as transferring a file across a modem or printing a document) you have the opportunity to recapture time by using more than one application simultaneously.

In some areas, multitasking won't necessarily save time, but will

degrade performance. Remember that multitasking works because of the mismatch in speed between the processor and the devices. Compute-intensive sessions do little more than crunch numbers; they don't use the devices. Multiple number-crunching applications actually compete with each other because they cannot overlap computing with waiting. However, the issue here is *multiple* compute sessions. Computation and communications (for example) can be mixed very successfully.

Restructuring how you buy software

Part of the transition to multitasking includes choosing new applications software. You should realize that being labeled "OS/2 compatible" doesn't guarantee that the software will maximize your productivity by taking advantage of preemptive multitasking. We have to modify the questions we ask when we evaluate software. Some additional questions to consider include:

- Does the application work with other applications running in the system?
- Does the application adversely effect system performance (how much does the rest of the system slow down when it is running)?
- Do I have to wait for the application (how often do I see a "please wait" symbol, which can look like the OS/2 clock face or the

If you spent

RECOVERED SOME TIME USING OS/2.

Windows hourglass)?

- If I see the clock face when the mouse pointer is inside the application window, can I use other software by clicking the mouse in another window?
- Does this application allow me to share files while it is running?
- When the application is very

LOTS OF TIME WAITING FOR A PRINTER, YOU SHOULD ALREADY HAVE

because you don't have a choice due to management decree or the lack of a competitive product). However, if that happens, at least you'll also know what to expect.

Learning curve

It is possible to use OS/2 the same way we used DOS: do only one thing at a time and monopolize the system. An important part of the learning process is a change in attitude or mindset. The advantages become apparent as soon as you discover that you can connect to your mainframe and get the mail at the same time you start a recalculation on the spreadsheet you created yesterday, while the system receives a fax that prints in the background.

If your job is "support," the first thing to do is make sure every user is aware that they can run multiple programs at the same time—any program, not just OS/2 applications. On more than one occasion a simple demonstration of a DOS spreadsheet running while a DOS communications program collects e-mail was enough to alert people to the possibilities.

It may take some time to develop the confidence to run multiple applications at once. If you tried to

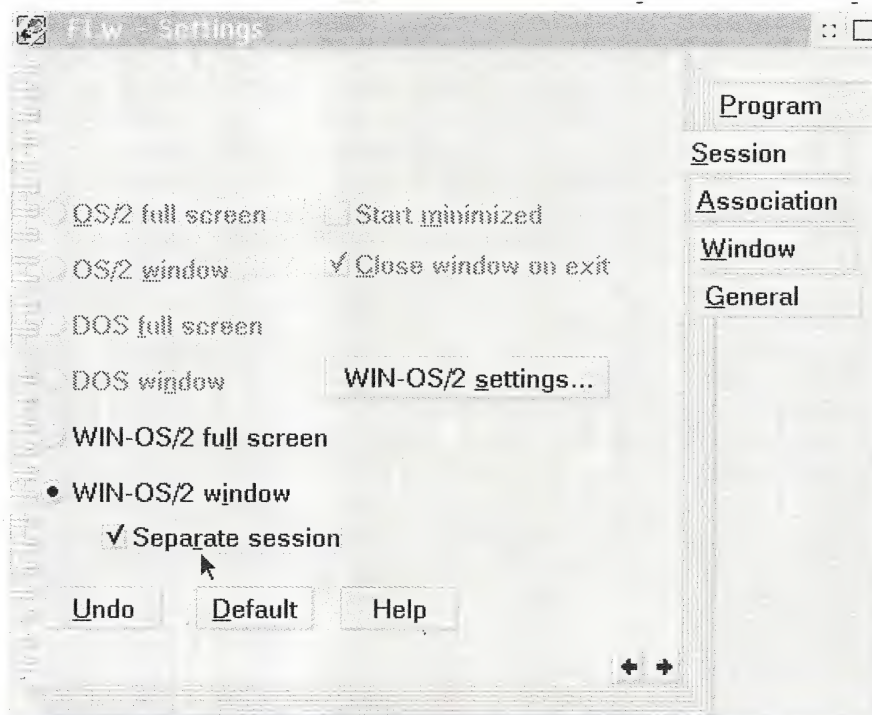


Figure 3 Windows applications can run in a common session or be isolated from each other.

busy, what happens if I press <Ctrl-Esc> to activate the Window List? Do I get the Window List or do I see a message box that says "... application is not responding..."?

Many OS/2 applications don't get a perfect score on the preceding test. You have to determine whether the score is acceptable. In addition, you may discover that some applications fail a few of these questions and you'll buy them anyway (usually

use multitasking in the DOS world, you may be gun-shy about attempting the same thing in OS/2. In DOS or Windows, an application that crashed could kill the entire system. This problem was especially evident in Microsoft Windows, because Windows applications share a common address space. One Windows application can inadvertently read or write memory that belongs to another application. In OS/2, the only application that is affected is the one that died; the rest of the system continues operating as if nothing happened.

It is also possible to extend DOS to use the "copy and paste" capability in OS/2 (Windows users may already be used to this capability). You can copy something from a window with a DOS-based spreadsheet into another window running a DOS-based word processor. Open the system menu for the windows and select Mark in the source window, then use the mouse pointer to select the area you want to copy. When you're done, press <Enter> or select Copy from the window's system menu and select "Paste" from the target window's system menu, as shown in Figure 2.

OS/2 2.1 allows you to run Windows applications the way Microsoft Windows does (in a common address space). If a Windows application within the session fails, every other Windows application within the same session may also be affected. OS/2 allows you to force each Windows application into separate isolated sessions. If one Windows application fails, the other Win-OS/2 sessions are not affected.

To make this approach work, open the Settings notebook for the program (if it is installed on the desktop—if not, you should create an object first) and turn to the Sessions page. On the Sessions page, select Win-OS/2 Full Screen or the check-box listed under Win-OS/2 Window that reads, "Separate session," as shown in Figure 3.

OS/2 is a tool

THAT ENABLES YOU TO BE MORE PRODUCTIVE. NO INCANTATION WILL PRODUCE RESULTS. YOU CONTROL THE PROCESS BY YOUR WILLINGNESS TO BE FLEXIBLE. OS/2 PROVIDES ANOTHER OPPORTUNITY TO ASK THE CLASSIC QUESTION, "WHAT IF I TRIED...."

You make a tradeoff if you select separate Win-OS/2 sessions. Each session requires that OS/2 load a copy of Win-OS/2. Performance will be better on a system that has at least 10Mb to 12Mb of installed RAM (although I have used it with a system that only had 8Mb of memory). If you have the system resources and run Windows applications in separate Win-OS/2 sessions, you can actually have preemptive multitasking between Windows applications—something Windows can do.

Actually, experience using OS/2 on a daily basis will enable you to get more adventuresome about multitasking. Several "personal" factors will affect your ability to take full advantage of OS/2's multitasking:

- Was the decision to install OS/2 one that you made or was it dictated by policy or an application you had to use?
- How willing are you to explore how you work, try new methods, try different settings, or fine tune your system?
- How much control do you have over the selection of applications to use with your OS/2 system?
- How willing are you to learn from other people's experiences (coworkers, books, on-line information sources, users groups, and so on)?

Summary

In our experience, it takes anywhere from 30 minutes to four hours for people to become comfortable with OS/2. Comfort, however, is a relative and subjective term. Our advice is to consider OS/2 a tool that

enables you to be more productive. No magic incantation will produce results. You control the process by your willingness to be flexible. OS/2 provides another opportunity to ask the classic question, "what if I tried...."

Still, OS/2 isn't for everyone. If you have someone in your office who uses a single program when they get to work and never does anything else with their computer, multitasking won't help them improve their productivity. Similarly, people who are uncomfortable with a mouse or cannot stand a graphical user interface might not be interested.

OS/2 is a robust operating system with lots of nooks and crannies. Because it is not as prone to crashing as the DOS/Windows combination, our clients report that they now spend fewer dollars supporting OS/2 than other configurations. However, they also report that training and planning are the best way to ensure long-term success. The bottom line is that OS/2 can only help you be more productive if you are willing to work at it. Productivity improvements aren't automatic.

David Moskowitz, president of Norristown, Pa.-based Productivity Solutions, was the original developer and instructor of the IBM OS/2 Conversion Workshops. He is a frequent speaker at conferences about OS/2 and object-oriented software development, is the author of Converting Applications to OS/2, and coauthor of OS/2 2.1 Unleashed. He can be reached at CompuServe 76701,100, or Internet 76701.100@compuserve.com.

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**You can read the
numbers, but
they don't tell the
whole story
by Robert
Chapman**

How to Benchmark OS/2

A VERY REAL PROBLEM EXISTS IN THE WORLD today, and it is causing many people, myself included, a lot of anxiety. The problem is that OS/2 2.x does not benchmark well. Before many of you stand up and start shouting that this statement is not true, please give me a few minutes to explain myself. Let me summarize what the computer press has been saying about OS/2 2.1 performance. They say that:

- Many DOS applications run slightly faster under OS/2 2.1 when executing in a full-screen DOS session.
- Most Microsoft Windows 3.1 applications execute a little slower under OS/2 2.1 in a full-screen Win-OS/2 session, and a lot slower when executing seamlessly on the Workplace Shell.
- Windows multitasking scenarios execute faster under Microsoft Windows 3.1 than under OS/2 2.1 Win-OS/2.

They point to their benchmarking software to support these claims, thereby making their analysis the official view of the OS/2 world.

Let's look at three things: first, why these three claims are true. Second, why these three claims are meaningless to an OS/2 user. Third, how OS/2 should be benchmarked so that the results actually mean something. You see, OS/2 is different from DOS and Microsoft Windows in fundamental ways, ways that negate the traditional PC way of viewing computer performance.

Validating the computer press claims

Let's take each claim individually and establish its accuracy. A faster DOS is often achieved by OS/2. This increase in speed can be attributed to the official explanation that the DOS

support provided by OS/2 2.x has been written in 32-bit code, making all of the DOS support functions, including all of the INT 21 processing, execute faster. This speed increase is most apparent in the disk I/O area. The DOS I/O requests are shunted over to the OS/2 32-bit I/O subsystem.

DOS programs that use a lot of DOS support services will find that each of these services runs faster. So, programs using a lot of DOS services, (typically meaning disk I/O) will execute faster under OS/2 than under native DOS—with a qualification. This increase in the speed of DOS services will be offset by the additional task-switching overhead of OS/2.

These applications are now sharing the processor with OS/2 and any other applications that are executing at the same time. Thus, given the same processor speed, DOS applications requesting lots of DOS services will execute faster under OS/2, but will also incur OS/2's task-switching overhead.

There you have it. Most DOS programs will execute faster under OS/2 because of the 32-bit support. But all programs will take longer because of OS/2's task-switching overhead. Combining the two effects gives you the claim that Windows multitasking scenarios execute faster under Microsoft Windows 3.1 than under OS/2 2.x.



Slower Windows 3.1 application execution is normal under most circumstances for the same reasons that DOS programs don't all run faster. IBM has stated, maybe unofficially, that the Win-OS/2 support code is 32-bit and optimized for performance. Once again, it increases the speed of Windows applications that use a lot of services. Because of the architecture of Windows applications, you can consider this statement to cover all Windows applications.

Once again, the multitasking overhead associated with OS/2 causes a performance decrease for Windows applications. Because OS/2 also supports the cooperative multitasking of Windows, we now have two layers of multitasking overhead: Windows and OS/2.

Windows applications executing in seamless mode on the OS/2 Workplace Shell are incurring a double overhead in windows (not Windows) management. Not only do we have Win-OS/2 overhead but OS/2 Presentation Manager overhead as well.

Once again, the claims are correct. OS/2 has more overhead associated with executing Windows applications than Windows has all by itself. These applications will execute slower under OS/2 than under native Windows.

Windows multitasking scenarios execute faster under Microsoft's Windows 3.1. If you do the math, you find that each Windows application executes slower under OS/2 than under native Windows, which comes as no surprise.

The computer press is right, OS/2 does execute some DOS applications faster, and most Windows applications slightly slower. But this is one instance where the sum of the individual pieces actually exceeds those of the parts, because when push comes to shove, OS/2 executes everything faster than Windows.

Discovering the folly of the benchmarks

Even though OS/2 benchmarks slower than Windows, it is a much faster system. You see, it all has to do with what a benchmark tests for, and how that differs from how products such as OS/2 really work.

OS/2 is a multitasking system, which means that more than one thing can happen at a time. DOS is not a multitasking system, which means that only one thing executes at a time. Windows is a cooperative multitasking system at the application level, but a non-multitasking system at the operating system services level. What this means to Windows applications is that, although they multitask between one another, when a system service is requested, everyone waits until the service is complete (it is more complicated than that in reality, but it is a valid enough generalization to be used in this discussion).

As a consequence of these three different architectures, (multitasking, single thread, pseudo multitasking) OS/2 is able to redefine the utility of the personal computer. It increases your computer's throughput by overlapping the CPU and disk usage as much as possible. DOS and Windows have little or no overlap. When the CPU is busy under DOS and Windows, the disk is not, and vice versa.

How important is this feature? Many people say they have no use for real OS/2 multitasking, but they are wrong. To those who say that multitasking has no value, I say look at the marketplace. Microsoft has spent millions of dollars developing Windows NT, whose primary feature is multitasking. Microsoft is also spending millions of dollars developing Windows 4.0, whose primary feature is multitasking. You might also remember that Microsoft was one of the original developers of OS/2, and we all know that multitasking was its primary feature.

Here is the crux of the matter.

When only one application is executing on your personal computer, DOS and Windows will always outperform OS/2. The folly is that, in today's environment, two or more applications are almost always executing simultaneously—even under DOS and Windows.

Almost everyone has a print spooler executing in the background, which is an application. Many people are connected to a network, which is a second application. Taking the first example of running Windows with a print spooler, anyone can see for themselves that OS/2 will finish a printing application faster than Windows if the print spooler is active. To verify this claim for yourself, simply go to the OS/2 printer object and select the Print While Spooling option, load your Windows application under the Win-OS/2 Full Screen environment and start printing. Your application will start printing immediately. Under Windows, the output does not start printing until after the application finishes the print request (you could disable the spooler and thus have the output go directly to the printer—but then you do not have an active print spooler). So, as you can see, even though OS/2 runs the Windows application slower, the printed output completes sooner, and your work is done quicker. Or, to be cute about it, slower is faster.

This example highlights the fact that OS/2 improves throughput, which is a function of the total system, and not just individual hardware or software applications.

Now, we come to another aspect of this benchmarking. It is less important, but you should be aware of it. Many benchmarking systems are available today, each computer magazine and news weekly uses some sort of CPU/Disk/Graphics benchmark suite to inform you of the performance characteristics of the hardware you use or buy.

With very few exceptions, these

benchmarks do not describe how your hardware executes under OS/2. Let me identify the major problems.

- Most CPU benchmarks work with 16-bit instructions, but OS/2 puts your machine in 32-bit mode. Therefore, all of these benchmarks understate the performance you will achieve when executing under OS/2—with one exception. Benchmarks testing floating-point performance are relatively immune to the effects of 16-bit versus 32-bit code, assuming the machine it is being tested on has a math coprocessor or 486DX or Pentium microprocessor.
- File I/O almost always uses the BIOS calls, but OS/2 almost never uses the BIOS. OS/2 executes in 32-bit mode, and the BIOS is 16-bit. This statement also holds true for the adapter BIOS.
- File I/O is always done in DOS, which alternates between CPU processing and disk processing. Under OS/2, some or all of the CPU processing can overlap the disk processing, thus giving faster access.
- File I/O under DOS has no head contention with other applications. OS/2 almost always has head contention when multiple applications are executing simultaneously. DOS and OS/2 file performance are pretty close to one another when only one application is executing and the disk is not fragmented or heavily fragmented. When the disk is not fragmented, the head movement is minimal for either operating system. When the disk is heavily fragmented, a tremendous amount of head movement occurs. What needs to be remembered, however, is that those using HPFS under OS/2 experience less fragmentation than under DOS FAT. Under OS/2, your disk performance will degrade slower.

- Graphics tests are probably the most fair of all the benchmarks when comparing OS/2 to DOS and Windows. But, even here, the benchmarks are skewed. Because Windows benchmarks use the Windows API set, which is a 16-bit API, these calls must go through a 16-bit-to-32-bit conversion (called thunking—which is certainly an appropriate name, because it is an expensive and not very elegant process) to use the OS/2 graphics engines. DOS benchmarks write directly to the hardware adapter, which OS/2 has to manage, so these tests understate OS/2 performance. Additionally, in this area more than any other, the design of the graphics engine means much more than any other factor.

Finally, you should note that most of the results presented are aggregates of many different tests. These aggregate values have built-in weighting criteria, which is often proprietary. You cannot make a rational analysis of whether the results being presented actually rep-

resent reality. A simple example of this inaccuracy is the publishing of disk-test data by most of the computer press. The results are presented in seconds, the smaller the value the better. However, the disk tests are actually a summation of a series of individual tests. The ratings are already skewed toward one type of disk I/O, and you, as the reader, do not know which. Many people would argue that, since all of the systems tested are subject to the same benchmark sequence, this method has value. But, quite frankly, if you are only going to accept benchmarks that do not show exactly how they test, you might as well save yourself the time of reading the benchmark results. It would be far more cost effective and much more accurate to go out and buy a computer system based on the processor type. Buying the newest processor with the biggest product number or fanciest product name, would give you satisfactory results as often as the results from these aggregated benchmarks.

The bottom line is that almost all of the existing benchmarks used in

My own experience

With over 20 years of experience in data processing, I have often assumed that I knew the answers before the questions were asked. And, quite frankly, I have. But a time comes when even the most certain of us need to reassure ourselves that the old truisms are indeed still true.

In this particular case, I have been involved in several of the OS/2 2.x beta programs, and regularly talk to OS/2 power users. It has been obvious from the design of the DOS and Win-OS2 subsystems that they would be high-performance subsystems. But, once again, the computer press did not seem to be giving results that correlated with the OS/2 design parameters. I decided to run a series of benchmarks in DOS, Microsoft Windows 3.1, OS/2 DOS, and OS/2's WIN-OS2 to get to the real truth. In a nutshell, the results corresponded very closely with my expectations.

CPU-bound processes, such as Windows graphics or word-processing page composition, executed slower under OS/2 than under native DOS 5.0 or Windows 3.1 by from 20% to 50% (sorry, all of you OS/2 2.1 diehards, much as I would like to tell a lie, I cannot). This result was a major disappointment, and certainly a bigger performance degradation than I expected to see. Especially since I expected to see some of the effect of the 32-bit support code.

I/O-bound processes executed faster under OS/2 than under native DOS 5.0 or Windows 3.1 by a constant 20%. This increase in I/O processing most certainly accounts for OS/2's ability to give the same range of speed on DOS and Windows applications that they get in their native environment.

Even though each individual CPU or graphics benchmark ran slower under OS/2 than under native DOS 5.0 and Windows 3.1, the application tests I executed ran as fast or faster under OS/2 than under native DOS 5.0 and Windows 3.1. This result highlights the most important facet of executing in a true multitasking operating system such as OS/2. The sum of the parts of an application is almost always more than the application as a whole. Table 1 lists my benchmarks in their order of importance for forecasting overall system throughput.

the computer press are heavily biased towards the DOS and Windows environment. They do not provide enough detail on testing methodology. They also do not measure a computer system's throughput, which is one of the major benefits of the OS/2 operating system. Lastly, they do not even attempt to measure the extra value OS/2 provides in usability (the workplace shell, running all your applications regardless of type), reliability (IBM's famous crash protection), and added value (applications up to 512Mb in size, flat memory space, high-speed communications).

Benchmarking OS/2 for the truth

Nothing has more of a reputation for lying than computer benchmarks. This lying is not just related to interpreting the basic numbers themselves. It has also been extended to the arena of product design. In the graphics-adaptor marketplace, several popular adapter manufacturers were found to be tricking a popular computer press benchmark. One manufacturer had programmed their adapter card to recognize the benchmark character strings and perform special-purpose logic to fake a high throughput. You can assume that, even as we speak, benchmarking systems are being

revised to prevent overt fraud, and somewhere else somebody is looking at ways to make their product look faster than it really is when running these common benchmarks.

Don't get the wrong idea here. It is imperative that manufacturers analyze the popular benchmarks and adjust their product performance appropriately. Benchmark developers go to great pains to try to model the way users are likely to use their computer systems. The benchmark programs should be used by manufacturers to tune their products. Once in a while, however, a manufacturer may go overboard and, when that happens, it is important not to be gullible.

Considering our discussion about the appropriateness of the DOS and Windows benchmarks to OS/2 and the real concern about products being tailored specifically to a given benchmark, it is important that any benchmark be appropriate to the system being tested. It is not enough to design a benchmark to demonstrate the superior performance of OS/2 over DOS and Windows—anyone can do that. The difficulty is in designing a benchmark that actually has value to you.

Any benchmark you design should give you more than bragging rights. It should give you a clear indication of the level of perfor-

mance you can expect from your current machine and any machines you contemplate purchasing in the future.

Start by realizing that OS/2 is a random-access system that looks like it is always doing random I/O to disk. A minimum of three applications are generally executing simultaneously on an OS/2 system. The first is your application, the second is the spooler, and the third is the memory swapper (some of you don't have much swapping because you went out and bought a ton of memory). Additional applications typically include network-client software (LAN Server for example) and database-manager software (such as DB2/2). The essence of running multiple applications is that the disk head is always moving. It moves from the spooler datasets, to the *swapper.dat* file, to the application files all the time.

Identify your operating environment so that you understand what features are the most important (critical or time consuming) to your daily work. These features may include using large amounts of disk space, calculating large amounts of spreadsheet data, printing reams of paper, or creating lots of documents. Be sure to note which programming tools you use the most often, the sequence in which you perform tasks, and the supporting software that goes along with these tools. Note your disk space requirements, current memory usage, and minimum necessary graphics resolution.

You can always trade memory for performance by increasing your disk-caching buffers and turning on lazy writes. However, you must realize that increasing disk-caching buffers increases the overall paging activity to the *swapper.dat* file. Generally, you get more performance by using bigger buffers.

Putting these facts together gives you the basis for creating a truly valuable benchmark. Start by adjusting the disk-caching values in your

Table 1: Benchmarks

Test	DOS 5.0/Windows 3.1	OS/2 DOS/WIN-OS2	Native OS/2 App.
Randomly Read and Rewrite data records	17.8 per second	22.8 per second	22.2 per second
Microsoft Powerpoint			
Load 300 slides	4 seconds	4 seconds	
Print 300 slides	85 seconds	85 seconds	
Microsoft Word 5.0 (not Word for Windows)			Microsoft Word 5.0 provided native support for OS/2
Load 600 page book	1 second	1 second	1 second
Print pgs 550-551	23 seconds	23 seconds	1 second
Popular Computer Benchmark			
Graphics	6.4 per second	3.3 per second	
Disk	1.3 per second	2.6 per second	

`config.sys` until they seem to give you reasonable and satisfactory performance. Keep in mind that the use of the lazy write facility, even though it gives a tremendous performance boost to some applications, is not always appropriate for all environments, especially those dealing with financial transactions. Use these same disk-caching parameters in your benchmark routines. Adjust the priority of your printer objects, and set the options the way you typically execute (such as selecting the Print While Spooling option). Use these same options in your benchmark routines.

Create macros, if they are available, for each of your common applications that approximate the functions that you typically execute. Use REXX to create a command file that initiates your applications in separate processes. If you typically only use one application, have REXX execute the application in-line. Have the REXX procedure execute the application sequence at least three times, and have it display the time each iteration occurs. Use the timings only from the middle executions, because the first execution has start-up time associated with it and shutdown time is associated with the last execution.

The bottom line of benchmarking

Most of the current popular benchmarks cannot be used to benchmark OS/2, or even to benchmark hardware executing in an OS/2 system. Benchmarks should be tailored to your specific environment, both hardware and software. If you must use a general-purpose benchmark, use one that recognizes that OS/2 acts more like a transaction-processing system than a single-tasking system.

When you review benchmarking results in the computer press, ask yourself the following questions. Do these tests use 32-bit instructions? Is the print spooler active during this

test? Is more than one application executing simultaneously? Are these Windows applications and, if so, were OS/2 applications available that should have been used instead? What were the disk-caching parameters, and were those appropriate for the tasks being benchmarked? Are the results aggregated together so that you cannot see the detail of the individual tests? Finally, you

must ask yourself if these benchmarking results have any meaning in your environment.

Robert Chapman provides training and consulting services to companies implementing OS/2 solutions to their business needs. He has been consulting for 17 years, and is the author of OS/2 Presentation Manager Programming for COBOL Programmers.

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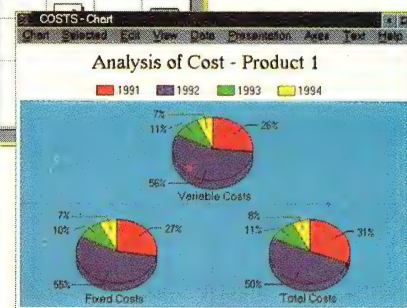
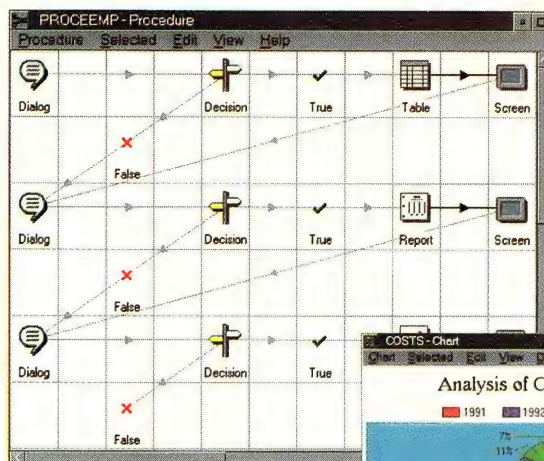


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Getting The Big Picture under OS/2

Twenty vendors who offer video card support for OS/2 BY ALEXANDER J. ANTONIADES

One of the major criticisms of OS/2 2.0 was that video display drivers for non-IBM hardware were almost nonexistent, and when they did exist you needed to be a rocket scientist to install them.

All this changed with the release of 2.1. Now included with the OS/2 system was full SVGA support for popular chipsets from ATI, Cirrus Logic, Headland, Trident, Tseng Labs, and Western Digital. Other major chipset vendors, such as S3 and Weitek, released their OS/2 drivers shortly after version 2.1 shipped. IBM also included DSPINSTL, a display-driver installation program with OS/2 to make installing new video drivers as they came out less of a problem. Other subtle improvements, such as the ability to use a DOS program to set SVGA cards in the DSPINSTL installation and the all important SETVGA command, which allows you to reset OS/2 to regular VGA mode in the event that the workplace shell is rendered unusable by the wrong video driver, are now included.

As much as OS/2 video drivers have improved, there is still a lot of work to be done. Not all implementations of an "OS/2 supported" chipset work. Even though your video card has a supported chipset, it might not work because the card manufacturer has changed the way the chipset interacts with the video hardware. Also, chipset-specific drivers are not as optimized as card-specific drivers, so performance tuning implemented by better card manufacturers is not used in a chipset driver. Currently, only

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its 32-bit brethren
is the ability to use
native Windows
drivers in full-screen
Win-OS/2 sessions**

the IBM XGA drivers offer integrated driver support that allows you to easily change video settings. But the situation is improving and all of these complaints could be resolved by the end of the year.

One area where OS/2 has a clear advantage over its 32-bit brethren (such as Windows NT, NextStep, and UNIX) is the ability to use native Windows drivers in full-screen Win-OS/2 sessions. For instance, if you really want to use your favorite Windows imaging product in a 24-bit color environment, and your video card has 24-bit capability but lacks the appropriate OS/2 driver, you can simply load the 24-bit Windows driver in a full-screen Win-OS/2 session and go to town. The Windows video drivers typically offer more options in terms of screen resolution, and often have utilities to facilitate any fine tuning the video card might need. The one negative aspect of

running native Windows video drivers is that you often come to the realization of how refined they are in comparison to the OS/2 drivers running on the same card. If you find this to be true with your video card, I prescribe a letter to the manufacturer demanding comparable performance between GUIs.

My experiences with OS/2 video drivers has been good, and I'd like to impart the following pieces of advice. If your card has a DOS setting program make sure to use it when installing the Workplace Shell drivers, and if you're going to use the native Windows drivers for your full-screen Win-OS/2, be sure to include the DOS setting program in your autoexec.bat. On the card that I use at home, I am able to use all of the native Windows drivers and I have only run into one problem. That problem is that the video modes between my Win-OS/2 screen and my Workplace Shell must be the same resolution. Otherwise, I can't toggle back and forth without considerable screen deterioration. If I just work in Win-OS/2, and change the video driver back when I'm finished, I don't have a problem. This method works well for me but, like the man says, your mileage may vary.

On the following page we have compiled a list of video cards whose vendors have announced OS/2 support. If your video card is not listed, contact the manufacturer.

Alexander Antoniadis is assistant editor of OS/2 Magazine. He can be reached on CompuServe at 71154,676.

Buyer's Guide

Table 1: Video-Card Support

Company	Card	Chipset	RAM	Price	640x480	800x600	1,024x768	1,280x1024
Adix	Graphics Engine 32/32i VL	S3 86C801/805i	1/2MB	\$199/\$329	256	256	256	256
Adix	Graphics Engine Ultra/VL	S3 86C928	2MB	\$329/\$595	256	256	256	256
Adix	Graphics Engine MCA	S3 86C924	1MB	\$369	256	256	256	N/A
Adix	Prostar VL	CLGD 5428	1MB	\$179	256	256	256	16
Appian	Renegade 1280 VL	AGC98032	2MB	\$495	24 bit	65K	65K	256
Artist Graphics	Win Sprint 500	TI 34020	2MB	\$1995	256	256	256	256
ATI	Graphics Ultra+	mach32	2MB	\$299	24 bit	24 bit	65K	256
ATI	Graphics Ultra Pro	mach32	2MB	\$499	24 bit	24 bit	65K	256
ATI	Graphics Ultra/Vantage/8514	mach8	1MB	\$249/\$189/\$369	256	256	256	N/A
Boca Research	Vortek VRAM	ITF014	1/2MB	\$395	256	256	256	N/A
Boca Research	Vortek-VL VRAM	ITF014	1/2MB	\$425	256	256	256	N/A
Colographic	Dual Flat Panel Adapter	CT65535	1MB	\$850	16	16	16	N/A
Colographic	Warp 2	ET4000/VW32i	1/4MB	\$850	16	16	16	N/A
Colographic	Twin Turbo	S3-86C924/928	1/2MB	\$995/\$1195	16	16	16	N/A
Colographic	lightning VGA	ET4000/VW32i	2MB	\$995	16	16	16	16
Colographic	Super MVGA	ET4000	1MB	\$850	16	16	16	N/A
Colographic	Super Dual VGA	ET4000	512K	\$650	16	16	16	N/A
Criterion	Graphics Genie	Avance Logic GUI	1/2MB	\$199	24 bit	65K	256	16
Diamond	Stealth 24/MB	S3-86C801/805	1MB	\$249	65K	65K	256	N/A
Diamond	Stealth Pro/MB	S3-86C928	1/2MB	\$299	65K	65K	65K	256
Diamond	Speedstar Pro	CLGD5426	1MB	\$169	256	256	256	16
Elsa America	Winner 1000	S3-86C928	1/2MB	\$449	24 bit	65K	256	16
Focus	Cheetah XL	CLGD 2426	1/2MB	\$169	256	256	256	N/A
Focus	Cheetah XL 28	CLGD 2428	1/2MB	\$199	256	256	256	N/A
Focus	TrueSpeed W32	ET4000/VW32	1/2MB	\$229	256	256	256	N/A
Hercules	Dynamite	ET4000	1MB	\$249	256	256	256	N/A
Infotronic	Info HiColor Lite	XGA2	1 MB	\$495	65K	65K	256	16
Infotronic	Info HiColor Plus	XGA2	2MB	\$695	65K	65K	65K	16
Matrox	Matrox MGA	MGA 64 bit	1/3MB	\$599	256	256	256	256
Nth Graphics	Double Edge	XGA2	2/4MB	\$1495	65K	65K	65K	256
Nth Graphics	S3 Advantage/VL	S3 86C801/805	1MB	\$299/\$399	24 bit	65K	256	N/A
Number Nine	#9GXE	S3-86C928	2/4MB	\$495	65K	65K	65K	256
Orchid	ProDesigner IIs	ET4000	1MB	\$249	256	256	256	N/A
Orchid	Fahrenheit 1280 Plus VL	S3-86C805	2MB	\$299	256	256	256	N/A
Orchid	Fahrenheit 1280 Plus	S3-86C801	1MB	\$249	256	256	256	N/A
Orchid	Fahrenheit VA VLB	S3-86C805	2MB	\$339	256	256	256	N/A
Orchid	Fahrenheit VA	S3-86C801	1MB	\$269	256	256	256	N/A
Pixelworks	Whirlwin II	S3-86C928	2MB	\$895	256	256	256	256
STB Systems	Evolution	CLGD 5422	1MB	\$149	256	256	256	N/A
STB Systems	Horizon/VL	CLGD 5426	1MB	\$159	256	256	256	N/A
STB Systems	Powergraph	S3-86C801/805	1MB	\$199	256	256	256	N/A
STB Systems	Pegasus VL/ISA/PCI	S3-86C928	4MB	\$849/\$999/\$999	256	256	256	256
Vermont Micro	Design Master S3 801/805	S3 86C801/805	1MB	\$495/\$550	65k	65k	256	16
Volante	Warp 10 Plus	S3-86C801	1MB	\$299	24 bit	65K	256	16
Volante	Warp 10 IB	S3-86C805	1/2MB	\$299	24 bit	65K	65K	256
Volante	Warp 20	ITF015	1/2MB	\$399	24 bit	24 bit	65K	256
Western Digital	Paradise 24	WD90C31	1MB	\$199	256	256	256	N/A
Western Digital	Paradise VL Plus	WD90C33	1/2MB	\$299	256	256	256	N/A
Western Digital	Paradise Ports O' Call	WD90C33	1/2MB	\$349	256	256	256	N/A

XGA	With OS/2 or Card	Where Available	640x480	800x600	1024x768	1280x1024	Tested*	Bus Type
N	Y (with card)	IBM BBS, Actix BBS	256	256	256	256	N	ISA, VESA
N	Y (with card)	IBM BBS, Actix BBS	256	256	256	256	N	ISA, VESA
N	Y (with card)	IBM BBS, Actix BBS	256	256	256	N/A	N	MCA
N	Y (with OS/2)	IBM BBS, Actix BBS	256	256	256	16	N	VESA
N	Y (with card)	Appian BBS	256	256	256	N/A	Y	VESA, ISA
N	Y (with card)	N/A	256	256	256	N/A	Y	ISA (2095\$ for MCA)
N	Y (with card)	BBS, CompuServe ATTTECH	65K	65K	65K	256	Y	ISA
N	Y (with card)	BBS, CompuServe ATTTECH	65K	65K	65K	256	Y	ISA, EISA, VESA, MCA, PCI
N	Y (with card)	BBS, CompuServe ATTTECH	256	256	256	N/A	Y	ISA, MCA
N	N	Boca BBS	256	256	256	N/A	N	ISA
N	N	Boca BBS	256	256	256	N/A	N	VESA
N	Y (with card)	N/A	16	N/A	N/A	N/A	N	ISA
N	Y (with card)	N/A	16	N/A	N/A	N/A	N	ISA
N	Y (with card)	N/A	16	N/A	N/A	N/A	N	ISA
N	Y (with card)	N/A	16	N/A	N/A	N/A	N	VESA
N	Y (with card)	N/A	16	N/A	N/A	N/A	N	MCA
N	Y (with card)	N/A	16	N/A	N/A	N/A	N	ISA
N	Y (with card)	BBS	24 bit	65K	256	16	Y	ISA, VESA
N	N	CompuServe OS2SUPPORT	65K	65K	256	N/A	N	ISA, VESA
N	N	CompuServe OS2SUPPORT	65K	65K	65K	N/A	N	ISA, VESA
N	Y (with OS/2)	CompuServe OS2SUPPORT	65K	256	256	16	N	ISA, VESA
N	Y (with card)	N/A	24 bit	65K	256	16	Y	ISA, EISA, VESA
N	Y (with OS/2)	N/A	256	256	256	N/A	Y	VESA
N	Y (with OS/2)	N/A	256	256	256	16 (2MB Only)	Y	VESA
N	Y (with OS/2)	N/A	256	256	256	N/A	Y	VESA
N	Y (with OS/2)	N/A	256	256	256	N/A	N	ISA, VESA
Y	Y (with OS/2)	N/A	65K	65K	256	16	Y	ISA (\$595 for MCA)
Y	Y (with OS/2)	N/A	65K	65K	65K	16	Y	ISA (\$895 for MCA)
N	N	BBS, CompuServe GRAPHICS	256	256	256	256	N	ISA, VESA, MCA, PCI
Y	Y (with OS/2)	N/A	65K	65K	65K	256	Y	ISA (\$1695 for MCA)
N	N	CompuServe IBMOS2	24 bit	65K	256	N/A	Y	ISA, VESA
N	N	Number Nine BBS	65K	65K	65K	256	N	ISA, VESA
N	N	CompuServe IBMOS2	256	256	256	N/A	N	ISA
N	N	CompuServe IBMOS2	24 bit	65K	65K	256	Y	VESA
N	N	CompuServe IBMOS2	24 bit	65K	256	16	Y	ISA
N	N	CompuServe IBMOS2	24 bit	65K	65K	256	Y	VESA
N	N	CompuServe IBMOS2	24 bit	65K	256	16	Y	ISA
N	N	By request	256	256	256	256	N	ISA
N	N	CompuServe STB, BBS	24 bit	65K	256	16	Y	ISA
N	N	CompuServe STB, BBS	24 bit	65K	256	16	Y	ISA, VESA
N	N	CompuServe STB, BBS	24 bit	65K	256	16	Y	ISA, VESA
N	N	CompuServe STB, BBS	24 bit	24 bit	24 bit	65K	Y	ISA, VESA, PCI
N	Y (with card)	IBM BBS	65k	65k	256	16	Y	ISA, VESA
N	Y (with card)	CompuServe GRAPHICS B, BBS	24 bit	65K	256	16	N	ISA
N	Y (with card)	CompuServe GRAPHICS B, BBS	24 bit	65K	65K	256	N	VESA
N	Y (with card)	CompuServe GRAPHICS B, BBS	24 bit	24 bit	65K	256	N	ISA
N	N	Western Digital BBS	256	N/A	N/A	N/A	Y	ISA
N	N	Western Digital BBS	256	N/A	N/A	N/A	Y	VESA
N	N	Western Digital BBS	256	N/A	N/A	N/A	Y	VESA

*"Tested" refers to whether or not the native Windows drivers have been tested to run under Win-OS/2.

Buyer's Guide

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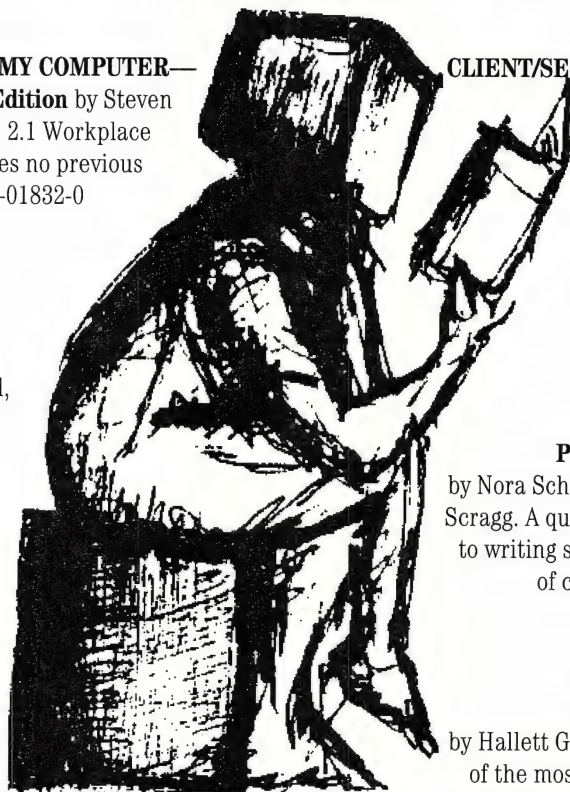
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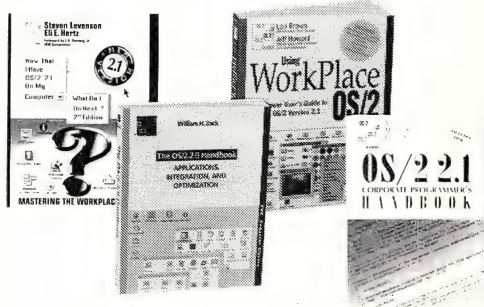


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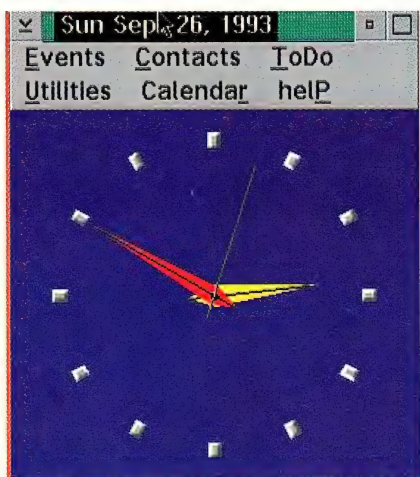
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Organize Your Life

Three single-user time management programs for OS/2. BY ESTHER SCHINDLER

TIME-MANAGEMENT PROGRAMS help you organize your professional and personal life. They remind you of appointments, meetings, things to do, and phone calls. You can use them to schedule automatic program launches, so you can check CompuServe at 4:30 a.m. or back up the network every night. Personal Information Managers (PIMs), a superset of time-management programs, add contact management and follow-up features.

None of the three single-user time-management programs for OS/2 reviewed here (AlarmPro, from Walkerwerks; Relish, from Sundial Systems; and Workplace Companion, from Arcadia Technologies) claims to be a personal information manager, though both Relish and Arcadia contain some PIM functions. All three share several basic attributes: they minimize to a clock or clock-and-calendar display, they will beep or launch applications at a specific time you set, and they support recurring events. How each program helps you manage your schedule, however, varies markedly.



AlarmPro, normal view.

Multiuser support isn't evaluated, though Sundial sells a network version, called RelishNet, and Arcadia is reportedly planning a multiuser Workplace Companion. Network support requires different features and priorities than single-user packages, which is why IBM's Time & Place isn't included in this roundup.

AlarmPro

AlarmPro is a \$45 shareware package with an impressive bang for the

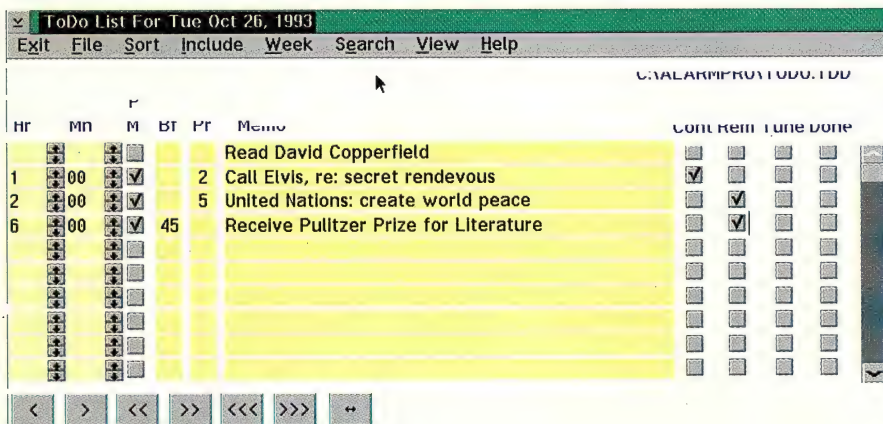
buck. As its name implies, AlarmPro's primary purpose is to schedule reminders and lists of things to do. In some ways, it competes less with Relish and Arcadia than it does with the To-Do productivity application included with OS/2. AlarmPro includes a To-Do list, scheduled alarms, and a phone book.

To-Do list items don't require an assigned alarm time, though they may have one. If you don't finish an item on your To-Do list today, the item automatically moves forward to the next day. You can easily attach contact information to To-Do list items, such as a Call Mom To-Do item. To-Do items support nine priority levels. It's easy to change an alarm time—just point-and-click on the time and make the change.

A scheduled task can be a reminder (Call Mom) or an application (BACKUP C:*.* A:). AlarmPro's recurring events scheduling is less extensive than its competitors. Reminders can recur daily, weekly, or monthly, but you can't schedule an event for the third Tuesday of every month. Events do not show up on the main To-Do list, though you can view a single display of today's schedule.

The contact database is modest but adequate, including the basics of name, address, two phone numbers, and a comment field. Phone dialing is built-in. If you have a modem and you associate a To-Do item with a contact, AlarmPro will offer to dial the phone when the alarm sounds.

AlarmPro makes no particular use of the Workplace Shell. The right mouse button does nothing at



AlarmPro's To-Do list.

Reviews

all, and there's nothing to drag-and-drop.

AlarmPro's weakest area is its reports. You can print your contacts, events database, and To-Do list. The To-Do list can be printed in full, by week or by day; no other filters are available. All of these can be printed to either a printer or ASCII file. The reports are readable, but nothing to write home about.

Relish

Sundial Systems' Relish supports more event types than the usual appointments and To-Do lists. You can schedule meetings, appointments, To-Do list items, notations, phone calls, and program launches. All events appear on one central list. Just about any way that you think is an obvious way to create a new item will work: double-click on an icon in the Note Palette, drag it to the date in the calendar display, drag it to the time on the time bar, or select Add Phone Call from the menu.

Drag-and-drop is fully implemented within the program and in its interaction with OS/2. You can drag an appointment to the desktop or you can drop a phone call on the daily time line to schedule a new phone call. To change a font in Relish, use the OS/2 font palette. Relish's integration into the Workplace Shell is superb.

If you own Bocasoft's System Sounds, you can customize the sound Relish uses for each of its alarms. Do you want a fog horn to sound when it's time for your staff meeting? No problem.

You can view your schedule by day, week, month, or specific time period. You can also view items that are overdue (deferred), or filtered by customized groups. For example, you can create one group for events related to a specific work project,

and another for family activities. These groups can be viewed or printed independently, or you can look at all groups.

You can set priorities on To-Do items (from one to 100). Contact information can be associated with

cause a scheduling conflict. It does, however, display a bright asterisk in the view for that day. Events can recur daily, weekly, monthly, or yearly. They can be scheduled for a specific day of the month (third Tuesday, first Monday), or periodically, beginning on a certain date. You can schedule a specific number of repetitions, but not with an "until" date (such as "Remind Santa that I want a CD-ROM player," every day until Christmas).

Relish's biggest handicap is its time-dependence. Every item must have an associated time. You can't create an item to Call Ross Perot today without associating a time that you intend to make the phone call. Also, unfinished To-Do items don't automatically move forward to the next day.

Relish's phone book is simple, with room for a name, address, and remarks. You can enter several phone numbers and descriptions.

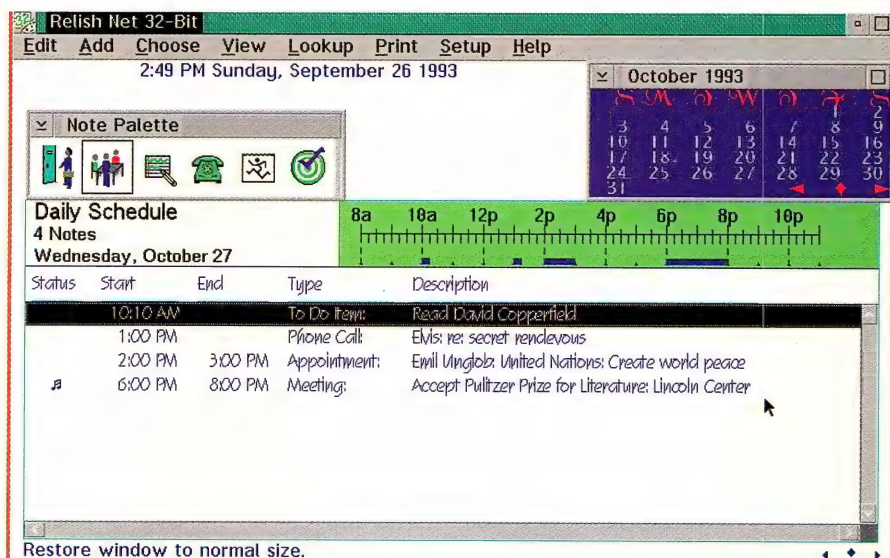
When an alarm goes off, you have several options. While the other packages merely let you acknowledge the alarm, Relish will let you defer the event, revise it,



Relish, iconized.

phone calls, and Relish will offer to dial the number when the alarm sounds. Relish's time analysis is impressive. It is designed for people who don't like to type. With practice, you'll learn that M 9 can be all the information that Relish needs to schedule an event for next Monday morning at 9:00 a.m. In most cases, you can enter a task in a few seconds. A memo can be attached to any event.

Unlike Arcadia's Workplace Companion, Relish doesn't warn you if you create an event that will



Relish, normal daily view.

Reviews

erase it, or turn on the Snooze. You will be notified of an event when it begins and (optionally) at an alarm time some time before the event (such as setting the alarm to tell you to leave at 3:30 for a 4:00 doctor's appointment.) Turning on snooze will temporarily turn off notifications, so you won't be interrupted by blaring fog horns during a meeting with the CEO.

art.

Sundial Systems also markets RelishNet, which adds multiuser support under Novell and LAN Server. Using RelishNet, you can schedule any event for other network users, using shared resources.

Workplace Companion

Arcadia's Workplace Companion is less a stand-alone application



Workplace Companion normal view.

Relish's reports include daily, weekly, monthly, and yearly reports. They can include summary or full task detail and can print associated memos. Your schedule can be printed in calendar format, or with a daily calendar-type listing of note summaries arranged by time intervals (which you can choose). The reports are serviceable, but none of them are works of

than a collection of time-management tools. Arcadia includes an appointment book, a To-Do list, a phone book, and minimal contact-tracking.

The To-Do list and appointment book are separate tools. Individual appointments may be reflected on the To-Do list, though the reverse is not true. According to company representatives, most Workplace

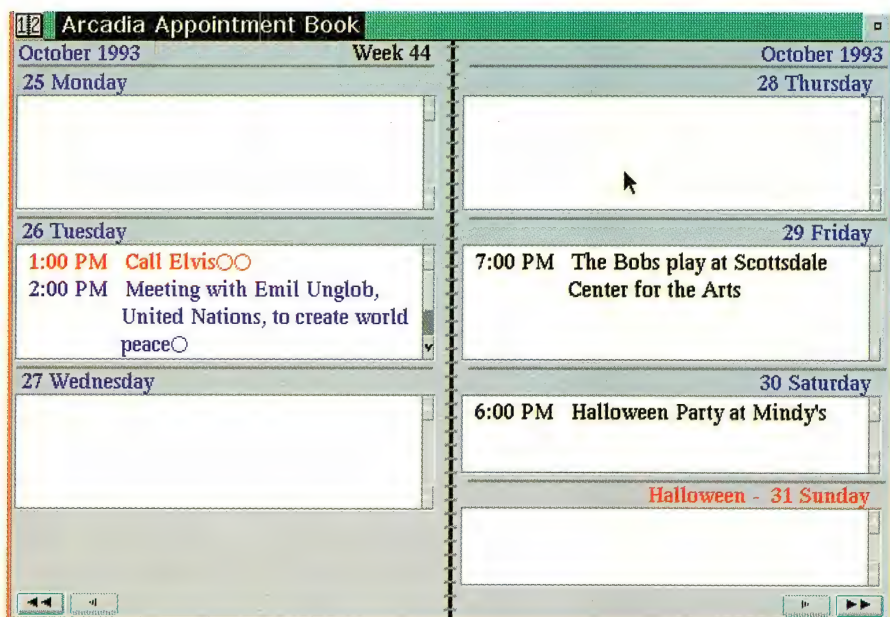
Companion users depend on the To-Do list or the appointment book—not both. Perhaps that configuration works best for many people, but I found it disconcerting. I prefer to look at one list, so I can see how much work needs to be done and become overwhelmed all at once.

You double-click on a blank part of the tool to create a new To-Do item, appointment, or phone number. The dialogs are consistent: each item supports a title (Pick up Nobel Peace Prize) as well as a note or comment field (Don't forget to brush your hair first). Each To-Do item can have one of four priority levels or a due-date. Workplace Companion doesn't actually do anything with the due-date; you have to remember to look at the To-Do list to remind you that, for example, your article for *OS/2 Magazine* was due yesterday. (Neither Relish nor AlarmPro have a built-in due-date reminder. In those programs, you would have to set an alarm for that date and remember to look ahead.)

You can look at the appointment book daily, weekly, work-weekly (Monday through Friday), or biweekly. A Planner view that graphically displays a color-coded grid of your schedule is also included. These notebooks work well. The Planner view in particular is extremely useful, providing the best "month at a glance" of any of these products.

To enter appointments into Workplace Companion, you fill in the time, title, and duration of the event. The alarm is off by default, and enabling it requires at least three mouse clicks. (In contrast, Relish assumes that the alarm should sound at the beginning of every event; AlarmPro assumes that scheduled events will trip the alarm, but that To-Do list items will

Reviews



Workplace Companion appointment book, work-week view.

not.) An application can be launched as part of any appointment. Recurring events can be set by day (every third day, or the first of each month), by week (every Friday), by day and month (the third Tuesday of every month), or yearly. The event can recur until a certain date, or a given number of occurrences can be scheduled. Workplace Companion includes a modifiable list of holidays.

Editing an appointment in Workplace Companion is simple. Double-click on the event and use the right mouse button to select which attributes to edit. This editing method works well, with one exception: the only way to change an appointment starting time is to edit it from the Planner view, not from the appointment calendar. If your manager changes a meeting from 4:00 p.m. to 10:00 a.m., it will take quite a few keystrokes to make that change.

Workplace Companion dialog boxes can be clumsy. If you're more comfortable with the keyboard than

with the mouse, you might not like Workplace Companion's dependence on slider bars and spin buttons. For example, the default appointment time is 9:00 a.m. The program picks 9:00 a.m. even if the

Because each **TIME MANAGEMENT**
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appointment is for today, and it's 2:00 in the afternoon; it won't warn you if you're entering an appointment for a time that's long gone. You can't backspace over the nine and type 11—you have to use the spin button or use the mouse to select the entire field and retype the hour.

Workplace Companion won't permit you to schedule two appoint-

ments that start at the same time. If you have a 10:00 a.m. appointment (Call Client A) and try to schedule another one for 10:00 a.m. (Call Client B), you can only overwrite the first appointment. This limitation is very awkward if you want to remind yourself of several simultaneous events, intending to choose the one to attend at the last moment. If you schedule the second appointment for 10:05 a.m., Workplace Companion will warn you that doing so creates a conflict, but it will let you create the appointment.

When an alarm goes off, you can only acknowledge it. If you want to defer the event an hour, you have to re-edit the appointment.

One of Workplace Companion's great features is its phone book and contact list. The phone book keeps all the information you would expect, a choice of icon, five custom fields, and a notes field. The contact list, a superset of the phone book, adds a phone log and a follow-up option to schedule a To-Do

list item (oddly, not an appointment). You can view the phone book by name or by icon, and you can add more icons than those included with the program. The notebooks are attractive and easy to manipulate, making it easy to search for data.

Workplace Companion's interaction with the Workplace Shell is inconsistent. You can drag-and-

Reviews

drop font or color changes to some tools, but not all. Phone listings can be dragged to the contact list (creating a new contact), or to the appointment calendar (creating a meeting appointment), but not to

ment cycle. They all suffer, to one degree or another, from "version 1-itis." Each of these programs is surprisingly stable—none of them failed during the evaluation. But none of them achieve the ele-

To-Do lists, and a good choice if you want simple PIM features. Its interface is aesthetic, if uneven. Relish is a robust, rich product with elegant integration into the OS/2 environment. It's ideal if you have a lot of time-critical events, or if you need network support.

Most OS/2 PROGRAMS ARE EARLY IN THEIR DEVELOPMENT CYCLE — THEY ALL SUFFER, TO ONE DEGREE OR ANOTHER, FROM "VERSION 1-ITIS."

the calendar (which controls the To-Do list). You can drag-and-drop to move an appointment from one day to another in the appointment window, but not to the Planner. You cannot automatically tie a phone number to an appointment; when the alarm goes off, you have to bring up the phone book. This approach becomes awkward in another way. Because each time-management tool is handled separately, Workplace Companion can take up a significant portion of your screen real-estate.

Workplace Companion's reports are good. They include a yearly calendar, a monthly calendar, a tri-fold brochure (the best report of any in this roundup), and a weekly appointment report (which lists appointments but not To-Do items). The report layout and presentation is attractive and functional.

Time to Buy

OS/2's features provide software developers with the opportunity to explore and expand software innovations. That's good. The down side is that most OS/2 programs are early in their develop-

ment cycle. They all suffer, to one degree or another, from "version 1-itis." Each of these programs is surprisingly stable—none of them failed during the evaluation. But none of them achieve the ele-

gance and maturity of their DOS and Windows counterparts, which is apparent in the number, quality, and graphic detail of reports and printouts. "Version 1-itis" also shows in the lack of advanced features. For example, TimeMaker (a Macintosh time-management program from First Wave Software) examines task deadlines and task age, and automatically sets the priorities for your To-Do items. None of the OS/2 products have reached this level of sophistication.

If you are using a DOS or Windows time-management program, and are happy with it, you have little reason to switch. While you will enjoy the integration into the WPS, you might be disappointed in what may seem like a step backwards in features. If your needs are simple—an electronic To-Do list or something to run your backup program at midnight—look no further than AlarmPro. It's simple, it's inexpensive, and it's a good value. If you need more, choose between Relish and Arcadia based on the way you manage your time. Arcadia is excellent for managing

Esther Schindler is a computer consultant who writes and teaches about computers. She is vice-president of the Phoenix PC Users Group, and co-coordinator of its OS/2 Special Interest Group. Esther is primary sysop of the ZiffNet Executives On-Line forum, and an outspoken user advocate. You can reach her on CompuServe at 72241,1417.

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Support on CompuServe in Section 5 of the OS2AVEN forum.

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Arcadia Workplace Companion (\$149.95)

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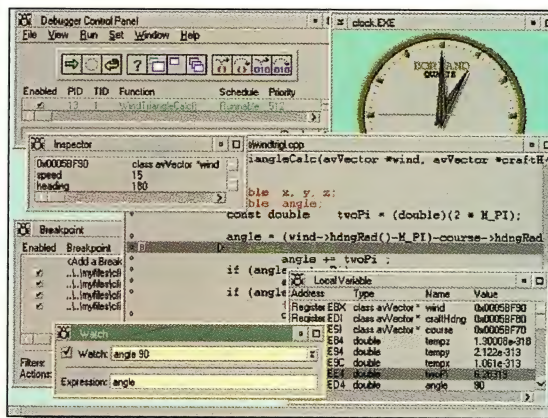
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Lotus brings its number-one word processor to OS/2

Lotus has released Ami Pro 3.0 for OS/2, a 32-bit version of its popular Windows product. Ami Pro for OS/2 shares many features with its 16-bit Windows predecessor, but has been completely rewritten for OS/2. The features include drag-and-drop editing, style sheets, multiple documents open at the same time, and the Lotus SmartIcon interface. New features include complete integration of REXX and the Workplace Shell. One feature that is missing, however, is the charting module.

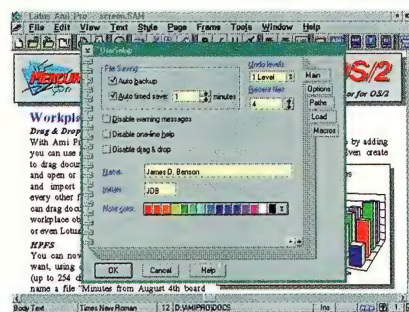
The suggested retail price for AmiPro for OS/2 is \$495 with a \$129 suggested retail price to upgrade from competitive word processors and a \$20 rebate coupon for current owners of Lotus word processors. Also offered for current owners of Ami Pro 3.x for Windows is a cross-grade offer where customers can order only the software for \$24.95 or the software and documentation for \$59.95. Ami Pro requires OS/2 2.x, 8Mb of RAM, and five to 15Mb of hard disk space. Lotus can be contacted at (404) 391-0011, fax (404) 698-7660.

Reader Service No. 175

Golden CommPass 2.1

Popular OS/2 CompuServe terminal program matches OS/2 with version 2.1

Creative Systems Programming announces the new version of their long-time OS/2 product, Golden CommPass. The 32-bit CompuServe interface program uses multithreading to make the most of costly on-line time. Users can automate the whole session before calling, then access and process the information Golden CommPass is retrieving while the session is still in progress.



Ami Pro for OS/2 shares many features with its 16-bit Windows predecessor, but has been completely rewritten for OS/2.

Version 2.1 addresses customer suggestions to make Golden CommPass better. It features superior message-handling capabilities, including remembering whether messages were previously selected or skipped and the ability to delete or archive messages automatically after an elapsed amount of time. The new version also makes better use of drag-and-drop in the user interface, improves handling of CompuServe Mail, and allows for most variables to be set in the OS/2 notebook pages.

Creative Systems Programming Corp. can be contacted at (609) 234-1500, by fax at (609) 234-1920,

and via CompuServe at GO GCP-SUPPORT. The price for Golden CommPass 2.1 is \$99. Upgrade pricing and a shipping date were not available at press time.

Reader Service No. 176

Central Point Anti-Virus for OS/2

Look out viruses! There's a new kid in town

Central Point is releasing the OS/2 version of their Anti-Virus product. Central Point Anti-Virus contains many of the same features as its 16-bit DOS and Windows predecessors. The Workplace Shell interface of the OS/2 version is similar to the Windows interface, from there it is possible to scan and clean any connected volume of over 2,000 known viruses. The 32-bit program is able to scan and clean unknown viruses without knowing an infected file's previous condition.

Central Point Anti-Virus sells for \$129 and is available now. It requires OS/2 2.x and 2Mb of available hard drive space. Central Point can be contacted at (503) 690-8088, or fax them at (503) 690-8083.

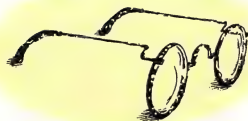
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BakupWiz

The open-ended OS/2 SCSI backup solution

PCX presents OS/2 BackupWiz, a new SCSI tape-backup and restoration program. BackupWiz supports any SCSI tape back-up device that can interface with an OS/2-support-

{ figure 1. }



SPECTACLES

{ figure 2. }



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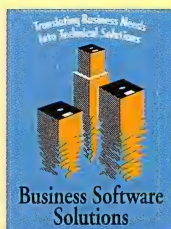
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OS2M11



Just Announced

ed SCSI interface. The program is character based, so that it is able to restore the OS/2 boot partition. BackupWiz also supports extended attributes and HPFS file names.

BakupWiz is available from PCX at a retail price of \$189. PCX can be contacted at (619) 259-9797 or fax (619) 481-6474.

Reader Service No. 178

DCF/2 1.1

OS/2 "on-the-fly" Disk Compression for FAT and HPFS

Proportional Software is expanding the OS/2 disk-compression market with DCF/2. This new utility creates a virtual HPFS disk where all

files are compressed, and that expands or contracts depending on usage. The actual drive on which the virtual disk exists does not need to be reformatted and can be a FAT, HPFS, or a network drive.

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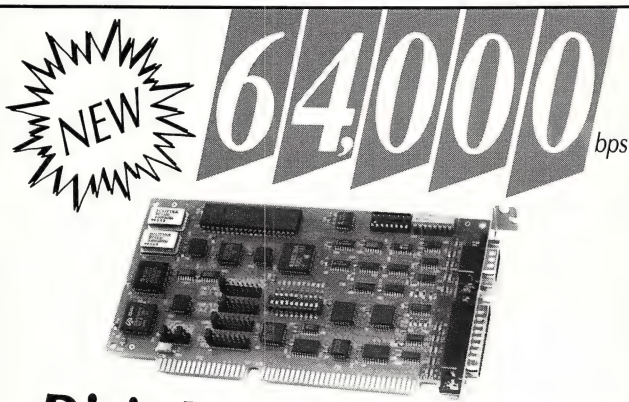
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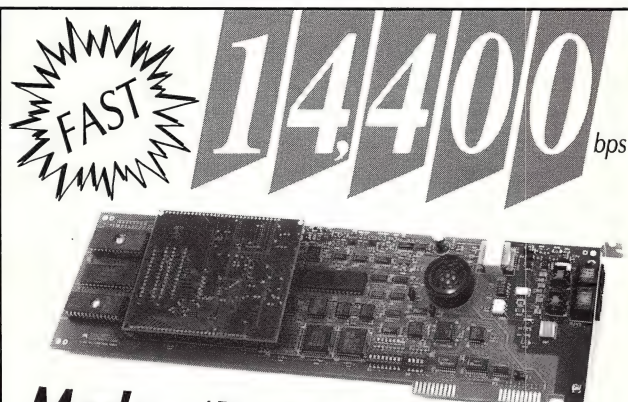
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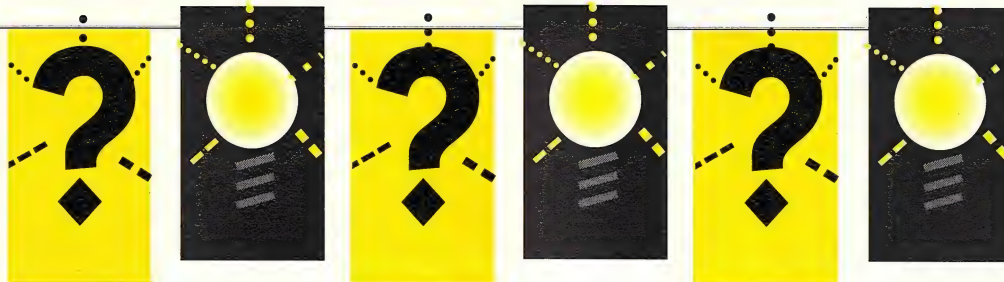
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Oberon Software announces the latest update to their multithreaded, character-mode terminal program, TE/2. All the features included in previous versions of TE/2 are still intact, including the 200-name phone book with individual session settings and queue dialing. Other popular features include a broad scripting language, many on-line control options, and a variety of terminal emulations and file-transfer protocols. Improved in this release of TE/2 are multimedia support, a bottom-line status bar, support for 115k bps, and an automatic script-file recorder.

TE/2 1.30 will be available in the first week of December 1993, pricing was unavailable at press time. Oberon Software can be contacted at (507) 388-7001, by fax at (507) 388-7568, BBS at (507) 388-1154, or CompuServe at 72510, 3500.

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Voodoo OS/2

Demystifying OS/2 through Technological Witchcraft

Ventana Press has released the latest in its "Voodoo" book series, *Voodoo OS/2*. The book is written by Allen Taylor, who is the president of an Oregon consulting firm, and a computer science professor at

Linfield College.

Voodoo OS/2 is billed as a book for all levels of users. The author states that the book should "give quick solutions to problems and answers to questions that occur frequently but are not well-documented elsewhere. Topics include Orienting to OS/2, Adapting to OS/2, Empowering Programs, Working Wonders with Workplace Shell, Demystifying Multimedia, and Achieving OS/2 Mastery.

Voodoo OS/2 is available in bookstores and through Ventana Press for \$24.95. Ventana Press can be contacted at (919) 942-0220, or fax (919) 942-1140.

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Alexander Antoniadis is the Assistant Editor of OS/2 Magazine

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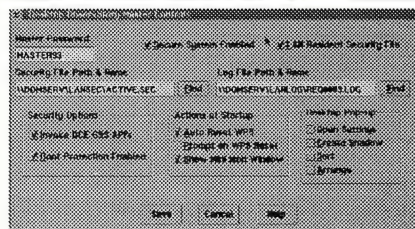
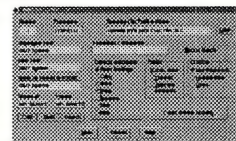
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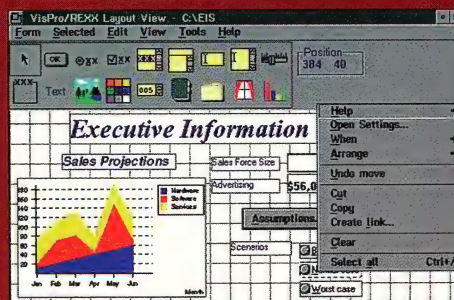


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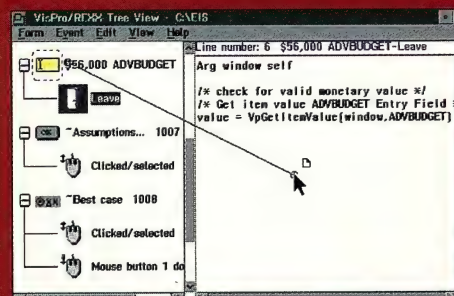
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Reader Service No. 29



First Steps

Writing time-saving programs is easier than you think. BY ALEX LANE

Over the years, I've run across a lot of computer users who've told me that someday, they'd like to learn to write programs for their machine. If you're one of those people, this column is for you, because OS/2 features a general-purpose programming language called REXX that's both powerful and easy to use. Programming in REXX doesn't require having to learn to use compilers and linkers, nor do you have to absorb a lot of theory concerning variable declaration, typing, and so forth.

Jumping in: simple output

REXX programs are executed from the OS/2 command line, so the first step in setting up your machine to work with REXX is to open an OS/2 window on the screen. You do this by opening (double-clicking) the OS/2 System folder, then the Command Prompts folder, and finally, the OS/2 Window program. Next, to create a

REXX program file, open an editor window on the screen. If you've got the OS/2 Enhanced Editor installed on your system, you can type:

```
start e first.cmd
```

at the OS/2 command line. This command will start the editor in a separate window, ready to edit a file called first.cmd. Resize and move the windows so they each occupy about half the screen without overlapping.

Now we're ready to enter a REXX program. Type the following code into the editor and save your work:

```
/* FIRST.CMD */
x = 3
say 'The value of x is ' x
say 'The value of x*x is ' x*x
x = 'Done!'
say x
```

Next, in the OS/2 window, type **FIRST** and press <Enter>. You should see the following output:

```
The value of
x is 3
The value of
x*x is 9
Done!
```

In this simple program, the first line is a `comment`, which is a chunk of text that starts with

the characters `/*` and ends with the characters `*/`. In our program, we've simply put the name of the file in the comment. Comments are ignored by the REXX interpreter when it executes programs. However, the first line of a REXX program must be a comment, so that the OS/2 command interpreter can tell the difference between an ordinary OS/2 batch file and a REXX program. (By the way, inserting comments into your code to explain what's happening in the program is a good habit to get into, since even the best programmers can forget why they wrote a program a certain way.)

The second line introduces a variable, called `x`, and assigns to it the value 3. It's convenient to think of a variable as a bin that can store information, and in this case, `x` is the name of the bin. For now, a good rule of thumb for naming variables in your programs is to start names with a letter, and continue with letters and numbers (for example, `t3`, `mortgageRate`, and `name`). You can, incidentally, use any combination of upper- and lower-case letters in a variable name, since REXX doesn't distinguish between the two (the variable names `x` and `X` are identical, as far as REXX is concerned).

The third line is a `say` statement. `say` is an output command that sends the items following it to the screen so you can see them (there are ways of sending output to a file or your printer, too, but we'll talk about that subject some other time). In our pro-

Table 1: Mathematical operations in REXX

Operator	Meaning	Example	Result
+	Addition	3+4	7
-	Subtraction	23-4	19
*	Multiply	6*7	42
/	Divide	13/5	2.6
%	Divide and return integer portion	13%5	2
//	Divide and return remainder	13//5	3
**	Exponentiation (power)	3**2	9
Prefix -	Negation	-5	-5
Prefix +	A positive number	+5	5

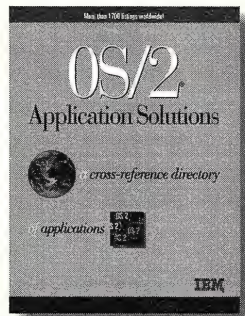
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Installing REXX

What? You say you didn't install REXX back when you installed the rest of OS/2? No problem! Just get out your OS/2 installation disks and do the following:

- Open (double-click) the OS/2 System folder.
- Open the System Setup folder.
- Open the Selective Install program, and click on the Ok button to get to the list of installable features.
- To install the REXX interpreter, click on the REXX check box.
- If you want the REXX on-line information, click on the Documentation check box, then click on the More button to the right. Make sure the REXX Information check box is checked. You can also uncheck the OS/2 Tutorial and OS/2 Command Reference check boxes to deselect them.
- Click on the Install button and follow the instructions displayed on the screen.

gram, **say** sends a string, followed by the value of the variable **x** to the OS/2 window. Strings are a series of characters that start and end with apostrophes (as in our code) or quotation marks. Notice that the variable name **x** is not interpreted by REXX when it occurs inside the string. Outside the string, the REXX looks up the value of **x** before sending it to the screen.

The next line is also a **say** state-

ment, except we now have an expression **x*x** to deal with. The asterisk denotes multiplication, and the expression calls for REXX to multiply the value of **x** by itself (in other words, calculate the square of **x**) before sending the result to the screen. A list of REXX mathematical operations is shown in Table 1.

On the remaining two lines, we assign a new value to **x** and send the

value to the screen. This underscores the fact that REXX variables, unlike variables in a language such as Pascal, have no type, so a REXX variable can store a number or a string. (In fact, REXX represents all data in variables as strings of characters but has the ability to distinguish numeric strings such as 123 from other strings of characters.) Since variables have no type, we don't need to declare the variables—in effect, tell REXX you'll be using certain variable names in the program—as you must in Pascal.

Next step: simple input

The *first.cmd* program could actually come in handy if you're stuck without a calculator and you need to square a list of numbers. Unfortunately, if you had to re-edit the file every time to change the value of **x**, its handiness would be limited. REXX offers several ways around this problem; one of them is the **parse pull** command, which allows a REXX

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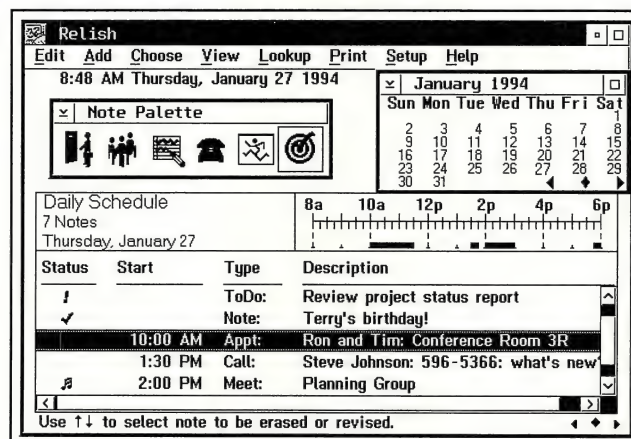
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program to get input from the user. Enter the following code, and save it as *second.cmd*:

```
/* SECOND.CMD */
say 'Enter number:'
parse pull x
say 'x = ' x ' ; x*x = ' x*x
```

When you run the program, it starts by prompting you with the string in the first line. When you type in a number and press <Enter>, the number you type is assigned to *x*. Then, the third line is executed, showing the number entered and its square. By the way, to give you an idea of the capability and flexibility of REXX, run the program and enter a long number, such as 987654321. The answer is displayed as 9.75461058E+17. (If you're not familiar with this notation—"scientific notation"—it means move the decimal point after the nine 17 places to the right, yielding

REXX background

REXX stands for Restructured Extended Executor, a mouthful that means REXX programs (called "command procedures") supplement the commands that come as part of OS/2, the same way batch files do.

DOS batch files (identifiable by their .bat extensions) are useful for performing a series of commands on a repetitive basis, as in the case of *autoexec.bat*, whose commands are automatically executed at system boot. The programmability of DOS batch files (to loop or branch, for example) is limited and awkward. OS/2 has batch file capability, too, with files that work much the same way. (OS/2 batch files have a .cmd extension.) Batch files containing REXX programs are by far more flexible, with the ability to do general-purpose tasks (such as calculations and data processing), as well as system-specific tasks (such as deleting files and launching applications).

Structurally, REXX is similar to PL/I, a language first implemented by IBM back in 1965. It is a structured programming language with commands for branching and looping, as well as a number of useful built-in functions. REXX programs are executed by an interpreter, which means that the code is executed one line at a time. A major benefit of this approach is not having to deal with a separate compiler and linker, while a side benefit of interpreted code is the ability to clearly pinpoint where syntax errors occur in a program (resulting in quicker understanding and correction of the problem).

975,461,058,000,000,000.) This is an approximate answer, and is about as good as most calculators (and programming languages) can do. Now, after the *parse pull* statement, insert the following line of code:

```
NUMERIC DIGITS 20
```

which tells REXX to calculate

numbers to 20 places. Now run the program again. The result (975,461,057,789,971,041) is exact to 18 places. The numeric digits statement controls the precision to which arithmetic operations are evaluated; the default value is nine and the upper bound is limited by your system's storage (by the way, very high precision will slow down calculation).

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You can input more than one value using a parse pull statement, too. Enter the following code and save it as *third.cmd*:

```
/* THIRD.CMD */
say 'Enter x and y
parse pull x y
say x 'to the power' y 'is' x**y
```

(Here, ** is the exponentiation operator.) When you run the program, the screen will look like this:

```
Enter x and y
(you enter) 3 4
3 to the power 4 is 81
```

This is a good place to pause and discuss how parse pull does its work. The information entered in response to the prompt is broken up so that everything up to the first space is assigned to the variable x. Then, the space is dropped, and the rest of the input is assigned to y. This behavior has some interesting consequences.

For example, if you enter 3 4 5 (too many values), x becomes 3 while y is assigned the value 4 5, resulting in an error message. If you enter 3 (leaving out the second value), x is assigned the value 3 while y is assigned the value "" (an empty string), which also generates an error message. Finally, if you type in *joe smith*, x is set to *joe* and y to *smith*, again resulting in an error message. In all three cases, an error occurs when it comes to evaluating the expression *x**y*.

How can we make this small program more "bulletproof?" We can take care of the first case quite easily, by replacing the PARSE statement in our program with the following line:

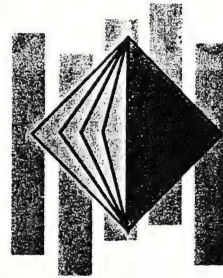
```
parse pull x y z
```

Now, entering 3 4 5 will result in assigning 3 to x, 4 to y, and 5 to z (which is ignored in the rest of the program). Fixing the second and third cases requires using concepts we'll introduce next month. For now, our program will do the job and, in

case you do enter incorrect input, you can simply rerun the program.

Alex Lane is a Colorado-based consultant and writer, and a contributing edi-

tor to Software Development magazine and AI Expert magazine. He can be reached via CompuServe at 75715,1370, or on Internet at 75715.1370@compuserve.com.



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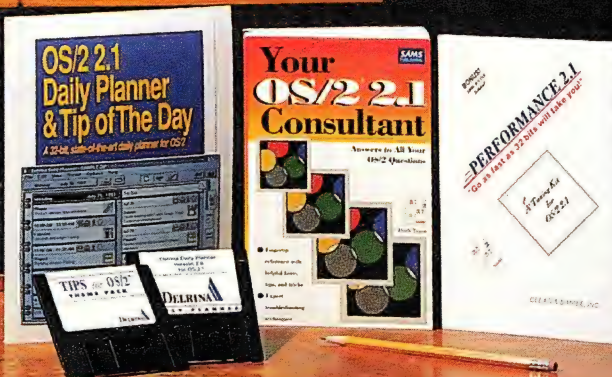
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I.D. #G1



Desktop Envy

Using a Windows scanner under OS/2 BY MATT TRASK



Are you suffering from Desktop Envy? That's the sensation you get when your neighbor's PC is sporting a bitmapped image of their family yacht as a backdrop. Or when your secretary's screen blanker is a scanned photograph of her new Harley-Davidson.

We've all become familiar with using scanned images on our personal computers. Digital artistry is common and many paint- and draw-type programs are available. Bitmapped images are also used with desktop publishing (DTP) programs or even word-processing programs. And, of course, those of us who don't quite excel at typing can benefit from the use of Optical Character Recognition (OCR) programs so that we don't have to retype faxes or other paper documents that seem to sneak into our in-baskets. The other common use of scanners is as an input device with fax modem adapters to replace the office fax machine.

Hand scanners and low-end page scanners are quite inexpensive—some models can be had for around a hundred dollars. More capable models that can capture gray-scale or color images range in price from around \$300 up to nearly \$2,000. But do they work with OS/2? And if so, how well?

Most popular scanners include a selection of bundled software that supports image capture under DOS and Windows. But, to the best of

my knowledge, no scanner-support programs are available for OS/2. It seems like a perfect opportunity to use OS/2's support for Windows software. This month, I tried out a couple of commonly available scanners and will present a complete scenario for using bitmapped images with various programs that could meet the needs of a typical OS/2 user.

As I embarked on this little adventure, I quite frankly expected to be disappointed by Win-OS/2. Supporting strange devices with custom interface adapters is a very different proposition than using a Virtual DOS Machine (VDM) to run a spreadsheet program. Hardware devices require things like DMA channels and rapid responses to Interrupt Requests (IRQs). A missed interrupt or DMA error can cause data loss or a system lockup. At the very least, I expected to spend a lot of time adjusting the settings for each scanner program. What I got instead was a very pleasant surprise.

The first one I tried was the new Nisca Page. This cute little device is about the same size as a box containing a dozen eggs. Its automatic

feeder can accept input ranging in size from a business card up to 8½ by 11 inches or larger. Images can be captured in up to 256 shades of gray. An internal battery and printer port interface let me actually perform my tests with a laptop system on an airplane while traveling

to the recent OS/2 Device Driver Conference. It sure got me some strange looks from the flight attendant!

The Page is a TWAIN-compliant device that comes with a Windows-based support program called Words & Pictures. This

applet installs itself onto the File menu of any running Windows program so it can be readily accessed. Operation with OS/2 presented no difficulty at all: I scanned a page from Delta's in-flight magazine at 400 dpi and then achieved nearly complete accuracy with the OCR support built into Words & Pictures.

Next, I tried the Logitech ScanMan 256. It supports 256 shades of gray and resolutions from 100 to 400 dots per inch (dpi). Because it uses its own interface adapter, I expected to have trouble with it. Instead, I had unrelated problems with a floppy disk drive.

DESKTOP ENVY:

The feeling you get when
your secretary's screen

blanker is a scanned

photo of her new Harley

Resolving that, the Scanman installed and worked almost flawlessly. I say, "almost," because it requires a Windows Virtual Device Driver (VxD) when running in enhanced mode. The VxD improves performance and reduces the chance of missing scanned pixels from moving the scanner too quickly. Since Win-OS/2 doesn't support Windows VxDs, I was forced to run it in standard mode.

Hand scanners all suffer from a common ailment—it's difficult to move them smoothly and in a straight line. Several companies manufacture jigs to hold the hand scanner in proper alignment as it is moved. One such device, Scan Align, is an inexpensive, simple plastic track that guides the scanner as you move it. Without it, scans would be twisted and warped. With it, the only concern was not to move the scanner too quickly; alignment was easily maintained. Scan Align fits most popular hand scanners.

The other scanner I used was a Nisca Spectra. This scanner is the same size as a typical hand scanner, capturing a four inch wide image. However, it is rather unusual in that the scanner head is encased inside a clear plastic box and driven by an automatic gear mechanism that eliminates any possibility of data loss from a shaky hand. This device captures 24-bit color images with up to 16 million shades in a single pass. Naturally, the higher the resolution, the longer it takes to capture an image and the larger the size of the resulting data.

Unlike the other two scanners, this one gave me considerable difficulty. But none were any different than the problems I experienced when using it with Windows 3.1. The Spectra interfaces to a PC via a serial port with data rates of up to 56,700 bits per second. I found that, even on a fast 486 system, I had to limit the data rate to 9,600 bps with OS/2 and Windows. Even

What is TWAIN?

What is this TWAIN and why does it matter? While the name is rumored to be an acronym for Technology Without An Interesting Name, the technology is the product of the TWAIN Working Group. This consortium is made up of representatives from Aldus, Caere, Kodak, Hewlett-Packard, Logitech, and others who collectively defined an interface standard making scanned input easily available to application programs.

This interface standard defines scanners as TWAIN Sources and makes them all look the same to an application program. This means that a TWAIN-aware paint program can use a variety of different scanners without requiring separate device drivers for each one. No native TWAIN support is provided with OS/2 but Windows TWAIN drivers seem to work fine with Win-OS2.

then, I sometimes had to rerun the communications initialization sequence between images to operate correctly for the next scan. Nisca has provided new drivers that support the TWAIN interface standard, but I was unable to test them in time for this column.

While ReadRight Personal scanned

without problems, I

was unable to coax it

into recognizing

any of the text.

Now that you've seen how well some common scanners work with Win-OS/2, let's take a look at some image-related applications that you might want to use. I've already mentioned the OCR support in the

Nisca Page Words & Pictures program. I also tried ReadRight Personal with the Logitech scanner. This was my least-successful endeavor. While it would scan without problems, I was unable to coax it into recognizing any of the text. After a relatively long time "recognizing," the OCR output was garbage. Running it under Windows produced similar results.

Faxing is another common use for scanners on PCs. Not having a native OS/2-based fax program, I used WinFax Pro 3.0 from Delrina Technology to successfully transmit a scanned image embedded in a Write document to a remote fax machine. The WinFax driver is installed as if it were a printer driver and directly operates the Practical Peripherals pocket fax modem that I have attached on COM1. This solution is not entirely satisfactory, as it only works with Windows programs and does not support faxing from OS/2 programs.

Micrografx Draw is an inexpensive, simple-to-use drawing package. It easily imported several scanned images, permitting simple editing. I experimented briefly with Desktop Publishing in the form of Microsoft's Publisher program. Color images that were obtained with the Spectra were placed onto a sample brochure with no difficulty. My favorite presentation graphics program is PowerPoint, which I use to prepare transparencies and slides for business presentations. The same images were placed into PowerPoint slides without difficulty.

I've got one other tip for those of you who want to work with scanned images. Any scanned image is guaranteed to take up more disk space than you will like. Higher resolution images may look better but they dramatically increase the size of an image's disk file. A grayscale image with 256 shades uses eight times as much

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disk space as a comparable black-and-white image. The best solution I've found is Stacker for OS/2 and DOS. While this compression driver is entirely invisible in normal operation and will usually double the effective size of your hard disk, many scanned images are even more compressible than normal program and data files, giving compression ratios of 4:1, 8:1 or even 16:1. Stacker's support for both OS/2 and DOS allows you to dual-boot and continue to use your compressed data.

It is possible to set up an entire suite of image-enabled applications for use with OS2 by taking advantage of the built-in Windows compatibility. In future columns, I will look at OS/2 from the perspective of a long-time Windows user making the migration into this new environment.

Matt Trask is the president of Communica Inc., a system software development firm based on Cape Cod, Mass. that specializes in device drivers for OS/2 and other advanced operating systems. Special thanks to Alan Jay Weiner of Technology 21 in Waltham, Mass. for providing assistance in getting the ScanMan to work. Trask can be reached on the Internet as matt.trask@bix.com.

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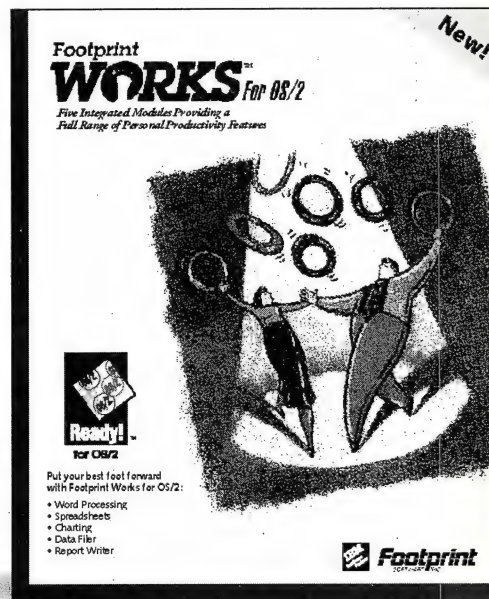
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Drives Object *cont'd from p. 96*

```
ATTRIB -h -s wp_root._sf
<Enter>
for a FAT drive, or,
ATTRIB -h -s "wp_root. sf"
<Enter>
for an HPFS drive
```

Then delete the file. The next time you open the drives object on that drive, the file will be recreated with default settings.

SHUTDOWN

Q: Do I *really* have to shut down my system before powering off? What does shutdown really do?

A: As a general rule, you should make a habit of shutting your system down before powering off. Shutdown performs two basic functions. First, it initiates a signal sent to all applications to shut themselves down. Applications see this signal as a series of messages that let them know the system is going away. It gives them the opportunity to save any relevant information such as open data files or window size and position. The Workplace Shell is also one of these applications. The shell, although saving positions and states of its objects during system operation, forces a save of all current object states during shutdown. The other thing shutdown does is to shut down the file system, forcing it to flush all unwritten buffers and caches.

It is important to shut down your system because anything in the file system buffers that have not been committed to disk will be lost if you simply power down the system. Even if you use the FAT file system, this procedure is important. When IBM improved the performance of the FAT file system, one of the

things done was to add lazy-writing and caching. This addition leaves any system open to lost buffers if it is powered down without flushing these caches and buffers via shutdown.

VIO WINDOWS

Q: When talking about OS/2 with people, I hear them use the terms, Window, Windowed Command Prompt, VIO Window, and Full Screen. What is the difference between these terms?

A: OS/2 can run different applications in different modes depending on the application and your choices. Regardless of whether applications are written for DOS, Windows, or OS/2, they generally come in two flavors; text-based or windowed-graphics.

OS/2 runs applications in windows, on the desktop, or as separate, full-screen text-based sessions. A full-screen session is just that. It runs an application in a separate session on a screen that looks like the old-fashioned DOS systems. You cannot run OS/2 Presentation Manager (PM) graphics applications in these sessions, nor can you see other applications running in these sessions. They are used to run and see a single application at one time. These sessions are used by applications that have no need or desire for the complex graphics or window functions of the OS/2 graphical user interface.

At the other end of the spectrum is the OS/2 Presentation Manager window program. While either DOS or OS/2 (text-based) applications can be run in a full screen, only OS/2 Presentation Manager applications can be run in these windows. They combine text and graphics together in the windows on the screen.

Microsoft Windows programs can also be run in graphical windows on the PM desktop.

In between is the VIO-Window, or the Windowed Command Prompt. Basically, these are the same thing. OS/2 has the ability to run text-mode programs (DOS or text-based OS/2) in a window on the desktop. They are called VIO Windows and enable you to see text-mode programs along side graphical window programs on the PM desktop.

A Windowed Command Prompt is merely a VIO Window that is running the command interpreter so that it looks like a full-screen command prompt running in a window that is visible alongside the OS/2 PM windows.

PATH + LIBPATH

Q: I have installed many applications on my system and when I look at my *config.sys* file, my PATH and LIBPATH statements are huge. Not only that, but my system gets slower each time I add a new program. What should I do?

A: Many things are included in an OS/2 *config.sys* statement. The *config.sys* statements that are most often modified by applications are PATH and LIBPATH. These statements describe and define environment variables. These environment variables are kept inside the system and apply to all OS/2 sessions. Each has its own purpose in system operation. Others can also be defined and used by applications.

We'll start with the PATH statement. Back in the days of DOS, the PATH environment was how the system found an application executable file. What would happen was that when you typed in the pro-



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Tips & Techniques

gram executable name, the system would first search the current directory for the file. If it was not there, DOS would iteratively search all the directories specified in the PATH environment variable until either the executable file with that name was found and then executed or the path was exhausted, at which time a message saying the program could not be found was displayed. This method still has value for those who use command line application invocation rather than Workplace Shell program reference objects. The function in OS/2 is the same as DOS.

Many applications modify the PATH statement when they install themselves. Why? Some applications are DOS-based, and under DOS this modification was needed. Others are not using the Workplace

Shell to its potential. As you will soon see, modifying the PATH statement is not necessary for OS/2 applications. OS/2 applications developers will soon discover this fact and stop modifying the PATH where it is not necessary.

What should you do? The PATH environment variable as defined in the *config.sys* file has no effect in a DOS session (VDM). So, the first thing to do is to remove all the references to specific directories for your DOS programs. (Unless, of course, you want to start DOS programs from an OS/2 Command Prompt.) You should set the PATH statement for each DOS session in the *autoexec.bat* you use for that session. The only paths that should be in the PATH statement in *config.sys* are those that point to programs

that you will be invoking via an OS/2 command line (including those placed there by the OS/2 installation program.) Any program invoked via a Workplace Shell program reference object has the path and file name stored in the object's settings, so a PATH entry is not needed.

To sum up the PATH statement, the only entries that should be in it are the directories placed there by the OS/2 installation program, plus directories of programs you will be invoking from the OS/2 command line.

The most interesting environment variable is LIBPATH. The directories in the LIBPATH environment variable are where the system will search for DLL files. It is also not dynamically modifiable from a

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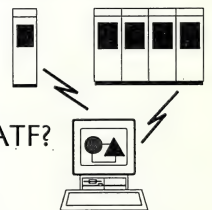
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command line (or even a program). LIBPATH performs a function similar to that of PATH, but it is system-wide and applies only to DLLs. The biggest difference, and main reason for LIBPATH is that when a program tries to load a DLL and does not specify a directory, only the LIBPATH directories are searched. The current directory is not searched by default.

You can see that as entries are added to LIBPATH, the search path gets longer and longer. Application writers may say, "I want good performance. Therefore, I'll modify LIBPATH and place my DLL directory first." With this configuration, everything else moves back in the search list. It then takes longer to find those other DLLs, and will hurt overall system performance (but

make that one application look better). It is also only a temporary solution because, as other programs get added (if they all add themselves to the front of the LIBPATH), each gets pushed back anyway. After a while, your most-often used DLLs (such as the OS/2 DLLs in `\os2\dll`) are so far back in the LIBPATH that it takes a terribly long time to find and load them. This problem is easy to solve.

In the OS/2 file system, a "." represents the current directory. That is, whatever the current session has as its directory, "." references it. Also, the OS/2 installation program puts a "." as the first entry of the LIBPATH. One would hope that the applications you install would know and work with this, but failing that, with just a little editing, you can

increase system performance.

For each program you have that has added something to the LIBPATH, look at the directory name it has added. Usually, it is the same place as it put the executable file. If not, you should move the DLLs for the program there. Now, go over to the program settings in the Workplace program reference object. Look at the program page. You see a field for the path and program file name. If the application's installation program created this program object for you, this field should be filled in. If you are doing it yourself, fill it in. Now look at the Working Directory entry. Type the drive and path of the directory containing the executable and DLLs into this field. Now fill in all of the other appropriate settings. Close the

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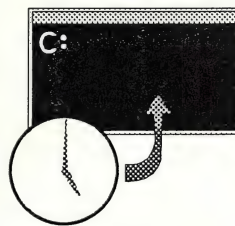
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Tips & Techniques

object settings. You can now delete what this program added to the LIBPATH. (Note: Be careful of applications that register classes with the Workplace Shell. If you do this, the objects of that class may not behave properly since the working directory "trick" does not work for WPS object classes. If this happens, you should put the entry in the LIBPATH at the end. You can reference the JAN/FEB issue of OS/2 Developer for more information on this topic in "OS/2 Programming Pearls.")

When you start this program from the Workplace object, the current directory will be set. Since a "." in the LIBPATH points to the current directory, and is the directory you placed in the settings, the DLLs will be found right away without affecting anything else in the system. You get the benefit of a fast DLL search, and won't hurt anything else in the process. Sounds like a winner all around to me.

Why don't application installation programs do this? The architecture of DLL's in the system, the DLL search paths and the Workplace Shell architecture make the decisions difficult. No one solution solves all the different uses for DLL's. For some of the simpler uses, the answers are easy. For others, a combination is needed. A more in-depth discussion on this can be found in the JAN/FEB 1994 issue of OS/2 Developer.

MIRRORING

Q: I have several machines upon which I'd like to install identical configurations of OS/2. I've been told I can't just mirror the hard disks. Why? How can I make this process easier?

A: When you install OS/2 on a sys-

tem, the installation program reads the hardware that is present. Based on this information, the OS/2 system installation program will set up device drivers and parameters such as swap file space and autocheck on file systems. Unless the hardware on the machines you want to mirror is identical, right down to the BIOS level and disk drive controller(s), you should not rely on a copy of an installed hard disk. You can, however, make the process of distributing OS/2 on multiple systems easier.

One option is to use the Configuration, Installation and Distribution (CID) utility available from IBM. It allows you to make images of the installation disks and place them on a network server. Then, by booting a set of diskettes you create, you can generate custom installations on all the machines on the network. The CID documentation is available from IBM by calling (800) 879-2755 and ordering publication number GG24-3783.

Another alternative is to use the remote IPL facility for networked systems. Remote IPL (RIPL) is a facility by which you set up a configured image on a server and place a special chip in your network adapter card. Then, rather than starting up the system from the hard disk, it will start from the image on the server. This facility is generally used for medialess workstations, but can also be used for systems with hard disks. You can have multiple machines booting from the same image on the server, thus eliminating installation on each machine. You can get more information on this facility by ordering publication number GG24-3892 from IBM.

Both of these solutions rely on you having the system connected through a network. Failing that, you could use a Workplace Shell backup utility to save a custom configura-

tion and restore this configuration to other workstations. You will still have to install the operating system on each machine individually, but can then place a custom, consistent desktop configuration on each. The requirement here is that the display resolution must be the same on each machine.

The other way to accomplish this still requires you to install each machine individually. You can use REXX, the system interpreter language, to customize the Workplace Shell. Refer to Chapter 15 of *OS/2 2.1 Unleashed* (SAMS Publishing, 1993) for helpful information on how to customize the Workplace Shell using REXX.

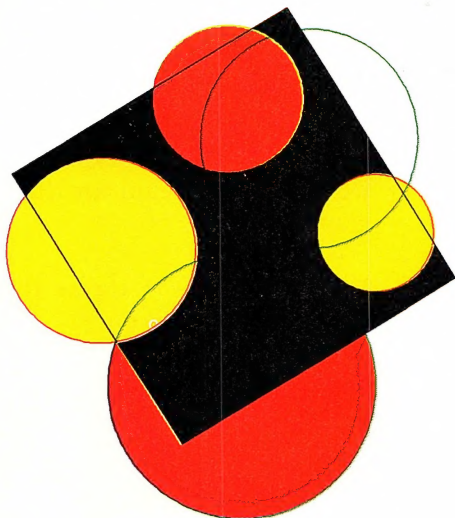
BETA

Q: I have a beta version of OS/2 2.1. Can I install the released version on top of it?

A: You can never install over a beta product without reformatting the drive you are installing on. The reason is that the functions and files in beta releases are not necessarily in the final product. If you install over a beta without reformatting, you may end up with a mixed configuration. If you are installing over any previously released version (ship level product or supported service level) of OS/2 (or DOS), you can install OS/2 2.1 on top without reformatting your hard disk.

David Reich has been with the OS/2 Development Team in Boca Raton, Fla. since 1987. He has written numerous articles for the OS/2 Developer magazine, is a coauthor of OS/2 Presentation Manager Programming, and the author of Designing OS/2 Applications. David can be reached via CompuServe at 76711,632 or via Internet at speedracer@vnet.ibm.com.

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Questions & Answers

Autoexec, Desktop Name, Mirrored Installations, and More. BY DAVID REICH



DOS AUTOEXEC

Q: I have some DOS programs that use statements in *autoexec.bat* to set paths and environment variables. How can I set environment variables for a single DOS session without setting them in the system's *autoexec.bat*?

A: OS/2 provides the capability to have a separate *autoexec.bat* for each DOS session. First, find the DOS program object you want to use. Using the right mouse button, bring up the context menu. Then open the settings. On the settings notebook is a tab called Session. Click on this tab. Now click on the DOS Settings pushbutton. You will see an entry in the column on the left called DOS_AUTOEXEC. Click on it. Now you can type in the path and file name of the batch file you want to make the *autoexec.bat* for that DOS session. Once you are done, simply close the settings notebook.

DESKTOP NAME

Q: I installed OS/2 2.1 over OS/2 2.0, yet my desktop name still shows up as OS!2 2.0 Desktop. Other newly installed OS/2 2.1 systems have the name Desktop. How can I change mine?

A: The reason your desktop's name is still the same as it was in OS/2 2.0

is because the OS/2 2.1 installation program simply migrated the desktop rather than creating a whole new one as it does on a fresh installation. The desktop can be renamed in several ways.

First, you may know that the desktop is really stored as a subdirectory in the file system, and that directories can be renamed. Whatever you do, *do not ever* rename the desktop directory from the file system. It will cause you endless problems.

To rename the desktop without any programming, bring up the Window List by either chording (pressing both mouse buttons simultaneously) with the mouse on the desktop, or by holding down the <Ctrl> key and pressing <Esc>. Once the Window List is visible, hold down the <Alt> key and click on the desktop name in the Window List. You can now type over or edit the name of the desktop. When finished, simply click somewhere else on the desktop. The name is now changed.

If you want to change the name of the desktop on many machines and don't feel like running around to each machine to do it manually, the following REXX program will do it for you. Just enter the following lines and name it *chgdtop.cmd*. Execute this *.cmd* file to rename the desktop on the machine. You must have installed REXX support for this method to work. (Thanks to Peter

Magid on IBM's Workplace Shell Development Team for this program.)

```
/* REXX CMD file to change the */
/* name of the desktop */
Call RxFuncAdd 'SysLoadFuncs',,
'RexxUtil', 'SysLoadFuncs'
Call SysLoadFuncs
if SysSetObjectData
  ("WP_DESKTOP>",,
  "TITLE=DESKTOP") then
  say "Desktop has been renamed"
/* End of REXX file */
```

DRIVES OBJECT

Q: My Drives object is behaving strangely. How can I fix this problem?

A: If you are having problems with the drives object, you can reset it to default behavior by deleting one file. The OS/2 Workplace Shell stores information about the drives object for a drive in a file called *wp_root._sf* (on a FAT drive, *wp root. sf* on HPFS drives), which is a hidden, system file in the root directory of each drive that has been accessed via the drives object. All of the drive information, as well as your settings for that drive object, are stored here. To reset the drives object back to a pure state, use the ATTRIB command to remove the system and hidden attributes from the file as follows:

Drives Object *cont'd on p. 90*

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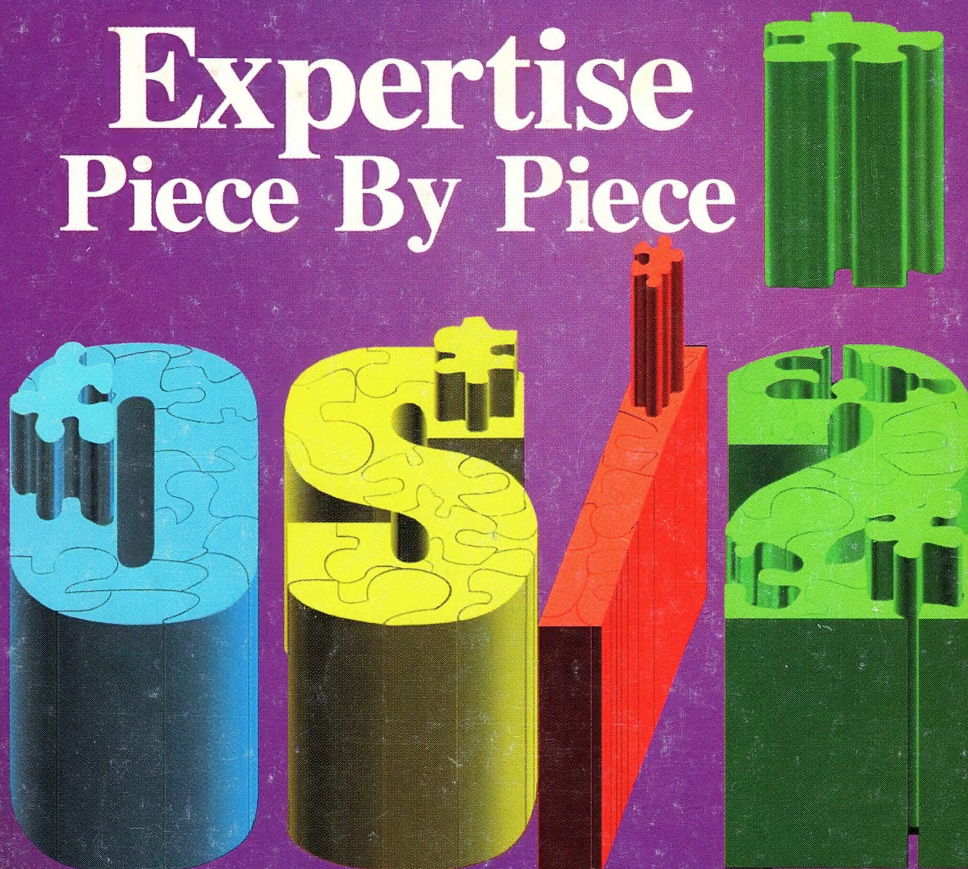
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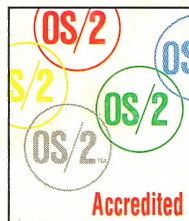
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